

COMMERCIAL CAR JOURNAL

with which is combined Operation & Maintenance

Reg. U. S. Pat. Off.

Acceptance under the Act of June 5, 1934, authorized December 18, 1934.
Published monthly.

Member C.C.A.

Vol. LVI

Philadelphia, January, 1939

No. 5

Editorial Department

JULIAN CHASE, Directing Editor

GEORGE T. HOOK, Editor

C. B. RAWSON HENRY JENNINGS HOWARD KOHLBRENNER
Managing Editor Technical Editor Art Editor

J. ALBERT LAANSMA JOSEPH GESCHELIN
Contributing Editor Detroit Technical Editor

MARCUS AINSWORTH, Statistician

L. W. MOFFETT & JAMES G. ELLIS, Washington Editors
B. M. IKERT, Contributing Editor

EDITORIAL CONTENTS

Copyright 1939, by Chilton Company (Inc.)

Feature Articles

Win \$250.00 (CCJ Maintenance Contest)	18
Fleetmen East and West Discuss Their Problems.....	22
Let's Look at the Recorder.....	26
Coal and Ice Fleet Freezes Out Waste	30
Ford Hydraulic Brakes	32
Miser Models	34
Fleets Turn on the Heat for Heat-Treated Frames....	39

Descriptions

Reo Restyles and Redesigns	36
Gar Wood Truckveyor and Load-Packer	38
Eaton Heavy-Duty Brake	38

Departments

Ears to the Ground	17
Free Books, Booklets, Catalogs, Etc.....	17
After Hours	21
Shop Hints from Fleet Shops	24
The Body of the Month	28
New Products	40
News Summary	42
New Truck Registrations	42
Letters to the Editor	43
Free Money Savers to You	89
Advertisers' Index	94

C. A. MUSSelman, Pres.; J. S. HILDRETH, Vice-Pres. and Manager Automotive Division; G. C. BUZBY, Vice-Pres.

OFFICES

Philadelphia—Chestnut & 56th Sts., Phone Sherwood 1424. New York—229 W. 39th St., Phone Pennsylvania 6-1100. Chicago—Room 916, London Guarantee & Accident Bldg., Phone Franklin 9494. Detroit—1015 Stephenson Bldg., Phone Madison 2050. Cleveland—609 Guardian Bldg., Phone Main 6860. San Francisco—444 Market St., Room 205. Phone Garfield 6788. Long Beach, Cal.—1593 Pacific Ave., Phone Long Beach 613-238. Washington, D. C.—Room 1061 National Press Bldg., Phone District 6877.

SUBSCRIPTION RATES: United States and United States Possessions and all Latin-American countries—\$3.00 per year. Canada and Foreign—\$4.00 per year. Single copies—40 cents.

Owned and Published by



CHILTON COMPANY
(Incorporated)

Executive Offices

Chestnut and 56th Streets, Philadelphia, Pa., U. S. A.

Officers and Directors

C. A. MUSSelman, President

FRITZ J. FRANK, Executive Vice-President

FREDERIC C. STEVENS, JOSEPH S. HILDRETH, GEORGE H. GRIFITHS, EVERIT B. TERHUNE, Vice-Presidents; WILLIAM A. BARBER, Treasurer; JOHN BLAIR MOFFETT, Secretary; JOHN H. VAN DEVENTER, JULIAN CHASE, THOMAS L. KANE, CHARLES S. BAUR, G. CARROLL BUZBY, P. M. FAHRENDORF.

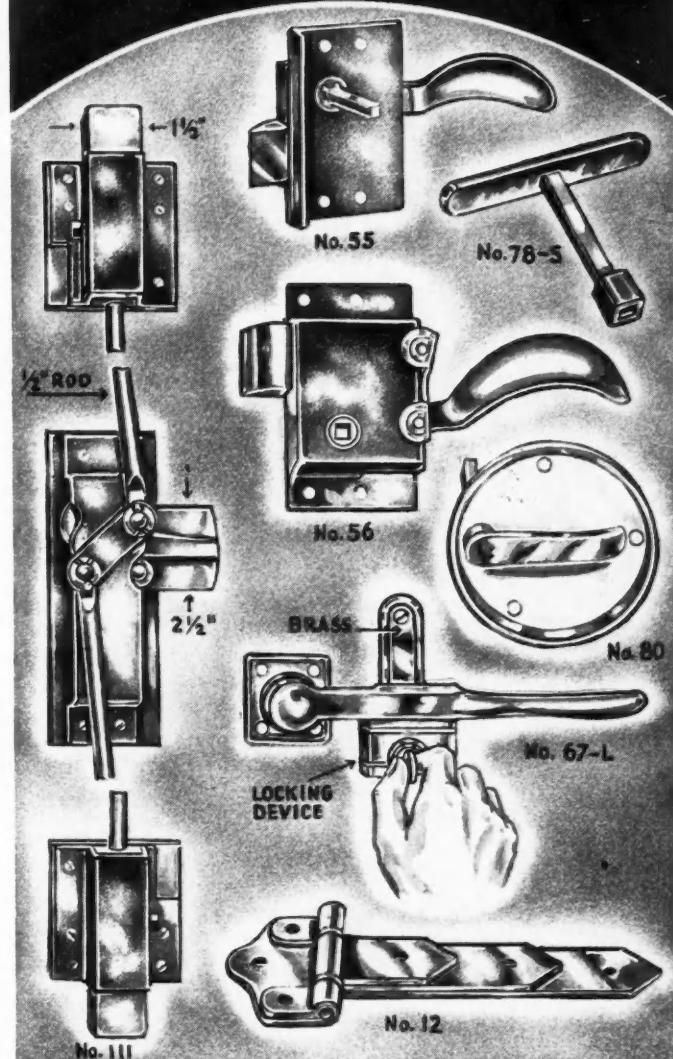
COMMERCIAL CAR JOURNAL

JANUARY, 1939

When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL Vol. LVI, No. 5. Published monthly by Chilton Co., N. W. Cor. Chestnut & 56th Sts., Philadelphia, Pa. Subscription price: United States and Possessions, Latin American Countries, \$3.00 per year; Canada and Foreign, \$4.00 per year. Single copies, 40¢, except April Issue, \$1.00. Acceptance under the Act of June 5, 1934, authorized December 18, 1934.

A Good Start for the NEW YEAR is the Right BODY HARDWARE



Each year HANSEN adds new products—unique features of design—that improve the appearance and performance of commercial bodies. Over a period of nineteen years, Hansen has proved the "right" hardware—for easier application—better service. Shown are a few of the more recent Hansen products—

No. 12 Leaf-Type Hinge

No. 55 Lock with square shank

No. 56 Lock with locking device

No. 67-L Lock with locking device

No. 80 Flush Handle

No. 111 Heavy-Duty Lock

Send for Folders

A. L. HANSEN MFG. CO.
5047 RAVENSWOOD AVE., CHICAGO, ILL.

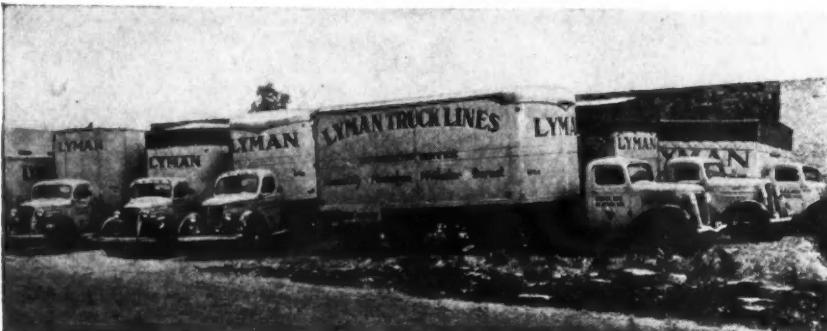


HANSEN
THE HARDWARE FOR HARD WEAR

LONG-DISTANCE



LYMAN TRACTOR-TRAILER combination frequently handles 20,000 lb. loads between Kansas City, Mo. and Durant, Okla.



THE LYMAN FLEET consists of Chevrolet, G.M.C., and International Trucks. Practically all are tractor-trailer combinations.



THE LYMAN GARAGE at Muskogee, Okla., where Texaco Motor Oil, Texaco Marfak, and Texaco Thuban have been in use for more than 5 years.

Texaco Dealers invite you to tune in The Texaco Star Theatre—a full hour of all-star entertainment—Every Wednesday Night—Columbia Network—9:00 E.S.T., 8:00 C.S.T., 7:00 M.S.T., 6:00 P.S.T.

TEXACO

When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL
JANUARY, 1939

COMMERCIAL CAR JOURNAL

VOL. LVI, NO. 5

JANUARY, 1939



BOOKS

BOOKLETS — PAMPHLETS — CATALOGS

... a special selection made by the editors ... to get your copy, just check the letter on the post card between pages 88 and 89 which corresponds with the item you desire ... and mail to Commercial Car Journal, Philadelphia, Pa.

A—Packard Re-wiring Manual

Packard Electric's justly famous Certified Re-wiring Manual offered last month to the trade at \$2 per copy is now available free to all fleetmen. It is a well-illustrated volume that outlines virtually every conceivable problem which might confront the electrical department and provides the answer. Each manual contains a set of wiring problems which when answered correctly and sent to the factory entitles the writer to a certificate showing him competent to handle electrical work. No fleetman should pass up the opportunity to secure this helpful book. Check "A" on the post card.

B—Diesel Job-Test Evidence

"Job-Test Evidence" is both the title and meat of an amazing review of heavy-duty hauling just released by the Cummins Engine Co. Theme of the 20-page booklet is the threefold diesel claim—"Cheaper to run," "Cheaper to service" and "Cheaper to own." Particularly to diesel skeptics do we recommend this booklet showing what is being done in the diesel field. Check "B" on the post card for your copy.

C—Premium Booklet

Scores of valuable shop equipment premiums, including tension wrenches, electric

tachometers, exhaust gas analyzers, etc., are listed in the new Wilkening Mfg. Co. premium book. These items are given to the trade in exchange for premium certificates now being offered with Pedrick piston rings. Check "C" on the post card for your copy.

D—Electric Welding Technique

An illustrated 20-page booklet, amassing facts on electric welding technique made possible through control of the welding arc, is available from the Lincoln Electric Co. In addition the booklet gives full details of the Lincoln "Shield-Arc" welder. Highly recommended. Check "D" on the post card for your copy.

E—Lubrication Enlightenment

The annual edition of Shell's Panorama of Lubrication is devoted to fundamentals of automotive engine lubrication interspersed with humorous jottings and sketches that relieve a message of serious import. The gist of the approach to the problems of engineer, salesman, serviceman and user is through enlightenment on matters of lubrication. More than light reading for anyone concerned with vehicle operation. Check "E" on the post card for your copy.

F—Analysis of Tire Recapping

Tackling the much discussed problem of tire recapping, Webster Rubber Co. offers an analysis of the subject in a folder explaining just what recapping is, how tire costs can be reduced, when tires should be removed for recapping and giving pertinent suggestions on establishing a tire maintenance routine. Every fleetman can use a copy. Check "F" on the post card for yours.

G—How Filter Keeps Engine Young

An excellent 18-page booklet from DeLuxe Products Co. graphically tells the story of DeLuxe filters and cartridges in picture and in print. Engineering details, practical application data, evidence of proper and improper use and many other informative subjects are treated. Highly recommended. Check "G" on the post card.

H—A Way to Cut Tire Cost

A 24-page booklet crammed full of information regarding the new Heat-Resistant cotton cord for passenger car and truck tires has been published by the Bibb Mfg. Co., of Macon, Ga. The results of several tests conducted with similar tires made with (1) ordinary cotton, (2) rayon and (3) heat-resistant cotton cords are most illuminating. Check "H" on the post card for your copy of the book.

I—How a Factory Tests Brakes

A brochure devoted to pictures and descriptions of the Wagner brake testing laboratory at St. Louis should be interesting to any fleetman. Major unit of the laboratory is the massive brake dynamometer capable of testing load equivalents from 3100 lb. on 28-in. tires to 34,000 lb. on 48-in. tires, at speeds up to 137 m.p.h. Check "I" on the post card for your copy of this 16-page booklet.

(MORE ITEMS ON PAGE 76)

Lining Lead

An operative who seldom gets excited burst into the office about press time and demanded that the bit of news he was bearing be given the opening paragraph of this department. Eager to please so enterprising an evaluator of the news, we set forth here on his authority notice that one large builder of trucks and passenger cars is shipping at random, with no advance notice, a quantity of vehicles equipped with dry-cylinder liners. The plan follows the same scheme as the manufacturer used in connection with experiments with cast-iron crankshafts and steel pistons.

Equipment Entry

If two heads are better than one, reasons one manufacturer, why aren't two engines better than one. To prove his point the manufacturer is building the truck with



two engines, and to keep disability on the part of one engine from interfering with the other, he has one engine driving a conventional rear axle and the other driving a third axle. In support of the idea another outfit is building a somewhat similar truck, and if the idea goes it may become a producing company.

Lubrication Label

Alemite has a new hand or foot lubrication gun for handling heavy fibrous lubricants. The hand lever delivers grease at 4500 lb. and the foot pedal gives a pressure of 10,000 lb. Another dispenser that holds 400 lb. of lubricant and which can be used either as a stationary or portable unit boasts electric-hydraulic operation.

Brake Baggage

Those who look at show exhibits with a keen eye have seen a new type of hydraulic brake. It is as yet without a name. The rear shoe piston instead of acting directly upon the shoe operates a lever which is connected to the rear shoe in such a manner as to give it a front shoe action. In other words, the work of stopping is more evenly divided between front and rear shoes.

GOLDEN GATE EXPOSITION



WIN \$250.00

DETAILS OF THE CONTEST

Prizes will be awarded for the best articles dealing with the subject:

"HOW OUR SHOP REDUCED FLEET OPERATING COSTS"

THE PRIZES

Grand Prize of an all-expense trip to the New York World's Fair or the San Francisco Golden Gate International Exposition, not to exceed \$250.00, or \$200.00 in cash, for the best article submitted.

In addition, four prizes of \$50.00 each for the best articles submitted in the following fleet classifications (one prize to be awarded in each classification):

1. Fleets operating 8 to 25 trucks

and tractors inclusive

2. Fleets operating 26 to 50 trucks and tractors, inclusive.
3. Fleets operating 51 to 100 trucks and tractors, inclusive
4. Fleets operating 101 trucks and tractors and up.

COMPANY AWARDS

Besides the cash awards to individuals, the companies which these winning individuals represent will receive suitable recognition of their accomplishments in the form of plaques. It is understood the companies will assist their employes by furnishing them with data necessary to the winning of prizes.

AWARDS FOR TIES

In the event of ties duplicate prizes and plaques will be awarded.

ADDITIONAL REWARDS

Articles which do not win any of the above prizes but which are acceptable to the Editors of Commercial Car Journal as editorial material meriting publication, will be purchased at regular space rates.

RULES OF THE CONTEST

1. The contest opens Jan. 1, 1939, and closes May 15, 1939. Entries must bear a postmark of not later than May 15, 1939.
2. As used in this contest the word

NEW YORK WORLD'S FAIR



PRIZES WILL BE AWARDED FOR THE BEST ARTICLES DEALING WITH THE SUBJECT:

"HOW OUR SHOP REDUCED FLEET OPERATING COSTS"

"Fleet" means any operation with 8 or more trucks. This includes trucks used as tractors. The fleets must be located in the United States.

3. The article must show how maintenance costs or operating costs were reduced as a result of shop practice.
4. The article must contain proof of cost reduction in the form of actual cost figures, or in the form of repair cost, gasoline, oil or tire consumption figures related to total miles traveled.
5. The individual who submits the article must be employed by the fleet concerned in the article. Any fleet employee is eligible. He must identify himself by giving his name and position and his company's name and address. The number of trucks and tractors in operation must be given.
6. In the case of a scattered fleet, any or all divisions may be dealt with

separately, in groups or as a whole.

7. Fleet classifications for the determination of classification awards will be based upon the total number of trucks and tractors involved in the article.

8. Prize-winning selections will be made solely on the basis of facts presented. Literary style will not be a consideration.

9. Articles may be submitted in long-hand, although typewritten manuscripts are preferred. Only one side of each sheet of paper should be used.

10. Snapshots or sketches may accompany the articles and will be welcomed, but they will not be considered in choosing the winners.

11. All prize-winning articles become the property of Commercial Car Journal.

12. Articles not chosen as prize winners or accepted by the Editors for

publication at regular space rates, will be returned only if accompanied by return postage.

13. Staff members of Commercial Car Journal or employes of the Chilton Co., their families or relatives are not eligible to participate in the contest.

14. The decisions of the judges will be final. Decisions will be announced in the August, 1939, issue of Commercial Car Journal.

HOW would you like to go to the New York World's Fair or the San Francisco Golden Gate International Exposition at no cost to yourself? Or if you do not like to travel, how would you like to have

(TURN TO NEXT PAGE, PLEASE)

WIN \$250.00

IN CCJ MAINTENANCE CONTEST

(Continued from Preceding Page)

COMMERCIAL CAR JOURNAL lay \$200 in cash right in your lap? You could use it as the down payment on a house or for the trade-in balance on a new car, to buy a new baby or for any of those things that you have wanted to buy but couldn't—because you didn't have the money.

Next summer some one who has read the rules listed above will find himself in possession of \$250 worth of traveling or \$200 in greenbacks. He will not have to work very hard to get it. Nor will he have to learn to do anything that he does not already know. He is going to be rewarded for past performance. All he has to do is tell us about it.

The winner of the grand prize will win it on merit alone. The size of the fleet with which he is connected will not influence the judges at all. Any contestant connected with a fleet of eight or more trucks (the minimum number for eligibility) has an equal chance. Failing to win the grand prize each article has a chance to win a \$50 prize which is awarded in each of four classes of fleets determined by size. Eight to 25 trucks is one class. The others are: 26 to 50 trucks, 51 to 100 trucks, and 101 trucks and up.

In addition to the prizes awarded by the judges there is a chance to sell the article to the editors of **COMMERCIAL CAR JOURNAL**. Needless to say, the editors will read every article submitted that does not win a prize with the idea of purchasing it at usual space rates.

The fleets represented by the prize winners will receive a specially engraved plaque for their aid in providing their fleetmen with the figures

and records necessary to prepare the article. The plaque will serve as a permanent record of achievement for both man and firm.

Since the subject of the articles submitted in the contest is the shop's contribution to reduced operating cost, the article must obviously deal with maintenance. What is a maintenance article? Nothing but a history of shop practices and procedures which have already been used. There is nothing new to consider. The contest articles need only tell about a program that has already been worked out in detail and give results which are already known.

The article may be of any length. Use just as many words as you need to prove your case. Naturally all pertinent facts should be given, but any fleetman smart enough to enter this contest will be smart enough to know that the judges will not be interested in length nearly so much as in the value of ideas expressed.

COMMERCIAL CAR JOURNAL can give no formula for winning this contest. The editors will, however, be glad to clear up any misunderstanding that may exist in the mind of any fleet employe who has read the rules and is not clear as to their intent. Simply drop a line to the Editor, **COMMERCIAL CAR JOURNAL**. In any event, if the rules sound formidable, do not let that throw you. They are designed to provide a wide open contest on the subject of maintenance by fleet men.

COMMERCIAL CAR JOURNAL does not have the slightest interest in what position any contestant holds in any fleet operation beyond the point of his being on the payroll.

If it seems hard to know where to begin just sit down and make a list of all of the things that have been done in your fleet shop in the last few years to make the fleet operate at less cost. After the list is completed check into your cost records, gasoline or oil consumption records, shop tickets or whatever is indicated for evidence that the things that have been done have actually contributed to economical operation. When this is done you have the necessary material for the article, and you are ready to write.

If the idea of writing scares you remember that the judges are more interested in facts than they are in how well you can write. Write just as you talk.

Here is a list of subjects that have proved to be popular when discussed in **COMMERCIAL CAR JOURNAL**. All of them are suitable subject material for this contest. The contest is not restricted to these subjects nor is treatment of any of them necessary. They are simply suggestions to help contestants when they are considering subject material.

- Shop Layout.
- Gasoline Consumption.
- Oil Consumption.
- Tire Mileage.
- Rebuilding Methods.
- Economical Use of Shop Equipment.
- Instrumentation.
- Shop Hints.
- Adaptation of Preventive Maintenance to Conditions.
- Servicing a Scattered Fleet
- Handling of Road Breakdowns.
- Education and Training of Personnel.
- Welding.
- Painting.

There are no trick rules or qualifications. You do not have to tear the top off anything. You do not have to tear the wrapper off **COMMERCIAL CAR JOURNAL** or reasonable facsimile thereof and send it in. You do not have to go to the movies and answer questions. You do not have to listen to tomorrow's program to get the details. All you have to do is sit down and tell the judges what you have done to make your fleet operate at lower cost and what results you have been able to get. You have until May 15, to mail it.

Again, if you have any questions to ask, address The Editor, **COMMERCIAL CAR JOURNAL**, Philadelphia, Pa.

THE chairman of the Interstate Commerce Commission — the Hon. Walter M. W. Splawn, of Texas — seems to have taken to the stump to stamp out railroad competition, particularly motor trucks. In two recent public speeches dealing with transportation he has struck at trucks with reckless verbal blows. No one would deny him the right to speak his mind, but everyone — including his colleagues on the Commission — must deplore the manner in which he speaks it.

In his latest public appearance, that in New Orleans before the National Association of Railroad and Public Utilities Commissioners, he struck so low below the belt that it is entirely in order for the truck industry to claim a foul. The voice was the voice of ICC Commissioner Splawn, but the words would have been more seemly if they had come from a politician working as a paid propagandist of the railroads. Behold some of the words:

"... it is clear that we have the best transportation of all time. In fact, we have a great deal more at present than the existing traffic will properly support. The unregulated trucks and other unregulated agencies beat down the rates of the regulated common carriers toward an out-of-pocket basis. . . . Competition has become undue. Regulation has not yet been extended to cover all transportation with the result that there is an undue destruction of capital through cut-throat competition.

"... We have been so eager to avail ourselves of all the benefits of novel transport that we have lavished billions of public capital and other billions of private capital in creating and extending the new facilities. We have been so successful in multiplying facilities that we are now far ahead of the traffic. The new forms of transportation are in competition with each other and lend themselves to such competition as to threaten financial ruin to many operators of superfluous trucks, barges, ships and airplanes, and disaster to railroads. The fact that the railroads are doing as well as they are is evidence of the sustained demand for their services. Trucks now swarm over thousands of miles of new highways. The State and local governments are heavily in

AFTER Hours

EDITORIAL COMMENTS BY GEORGE T. HOOK, EDITOR

An ICC Member Speaks Like a Railroad Propagandist ... Some Highway Facts That Dispute His Statements

debt for these highways. They are not getting in taxes from the vehicles operating on them anything like enough to keep up the roads and retire the bonds issued in building the highways. . . . In building the highways the State and local governments have contributed five dollars for every one obtained from the Federal Government. The larger part of these huge sums was borrowed. With similar borrowings to match Federal aid for old age pensions and other popular expenditures it is inevitable that the credit of many local governments will be over-extended. With such over-extension of State and municipal credit may it not become increasingly difficult, in many instances impossible, to borrow for highway construction?

"In the meantime the unforeseen heavy traffic on the highways, with the aid of wind and rain, heat and cold, are rapidly destroying the new hard-surfaced roads. Within a few years many roads now taken for granted may have become unusable for commercial vehicles. While this is going on, many railroad companies may abandon considerable portions of their lines. Clearly the government has other duties now than merely to promote additional transportation."

There you have the spectacle of an Interstate Commerce Commissioner taking advantage of an opportunity afforded him by his office to utter the railroad-copyrighted claims of "subsidy," "unregulated competition" and "destruction of highways by trucks" without an iota of supporting evidence.

How out of line is Mr. Splawn?

Is the present sorry plight of the railroads due to truck competition? Are Federal, State and local governments the financial angels that Mr. Splawn pictures them to be? Let us look at some facts.

Consider first that matter of subsidized highway transportation. It is asserted that State, County and local governments are heavily in debt for highways and that they are not receiving taxes from the vehicles operating on them in amounts sufficient to keep up the roads and, at the same time, retire the bonds. It is also claimed that the larger part of the sums used for highway construction and maintenance is borrowed money. Analyzing the facts we find this:

Seven States have no highway bonds of any kind. Of the 41 States having outstanding bonds, of whatever type, 38 service them out of highway taxes or out of highway taxes plus toll bridge levies. Of the 38, exactly 30 service the bonds out of highway taxes exclusively. Of the other three making up the 41, two States service their bonds out of property taxes (Idaho with \$785,000 and Wyoming with \$3,385,000 in outstanding highway bonds), and the third (Colorado) serviced nine-tenths of its outstanding highway bonds from highway taxes and the remaining one-tenth out of property taxes.

In 1937 the total outstanding State road bond issues were \$1,936,600,000.

The outstanding county and local road bond issues for 1937 totaled \$1,180,000,000.

While the records of the U. S. Bureau of Public Roads show that

(TURN TO PAGE 77, PLEASE)

FLEETMEN

EAST and WEST

Discuss their Problems

Fleetmen gathered recently in Los Angeles and staged the equivalent of a Wild West thriller. They surrounded Overall Operating Costs, laid about with tomahawks of Experience and scalped many a costly phase of operation and maintenance. In the midst of the scalping even the Army rushed up with reinforcements and joined in the massacre with its own ideas of cutting truck costs. The sundry scalps, dried out considerably, are hung up to public view in this report.

Fleetmen also gathered in New York and attacked along the more formidable front of engine efficiency, better graduation of tire sizes and the difficulties of modern maintenance without the help of proper instruments in the field.

East is East and West is West and here the twain meet on the common ground of fleet operation.

2



1



3





9



10

Snapped at West Coast meeting were: (1) "Big Chief" Anthony of Pacific Freight Lines, (2) Ethelbert Favary and Meeting Chairman Templin, (3) Booth, of Los Angeles Dept. of Water and Power, (4) Harley Drake, Pacific Highway Transportation, (5) Thompson Products' A. T. Calwell, (6) Watt L. Moreland, Moreland Motor Truck Co., (7) Lt. Col. E. C. McGuire, and (8) Major E. C. Wood of Pacific Gas & Electric Co. At the Eastern meeting, Merrill Horine, of Mack Trucks, (9) and Baster, of White Motor Co. (10) were both on the speakers' list

6



7



8



WITH the emphasis on the practical rather than the theoretical, the annual S.A.E. West Coast Transportation & Maintenance meeting kept to a theme of "Lower Overall Operating Costs." The meeting was held at Los Angeles, Nov. 3, 4 and 5.

After the meeting was opened by Robert N. Reinhard, manager of automotive equipment, Golden State Dairies, Los Angeles, Watt L. Moreland, president, Moreland Truck Co., Burbank, Cal., spoke on "The West's Contribution to Low Cost Motor Operation."

Driving home the importance of western transportation in ironing out the bugs in heavy duty highway transportation, Mr. Moreland said: "These western states with their great distances, huge loads to be carried over mountains, through deserts, and over the great valleys, have always overtaxed motor vehicles, and always the demand has been for more reliable, larger, faster, and safer vehicles.

4



COMMERCIAL CAR JOURNAL
JANUARY, 1939

"The result has been that the West has acted as a proving ground for heavy duty equipment. Many of the more important items in the construction of modern heavy duty equipment were to a large degree pioneered in the West. A few of such items are copper lead bearings, compound transmissions, automotive air brakes, hydraulic brakes, and dual axles. Moreover, the distances and grades of the West made necessary the development of the modern long range motor bus, and of efficient heavy duty motors."

A table showing the average distribution of overall operating costs compiled by E. W. Templin, automotive engineer, Los Angeles Department of Water and Power, was shown.

No analysis of this chart could be more concise and enlightening than the chart itself which shows the distribution of the various classifica-

(TURN TO PAGE 50, PLEASE)

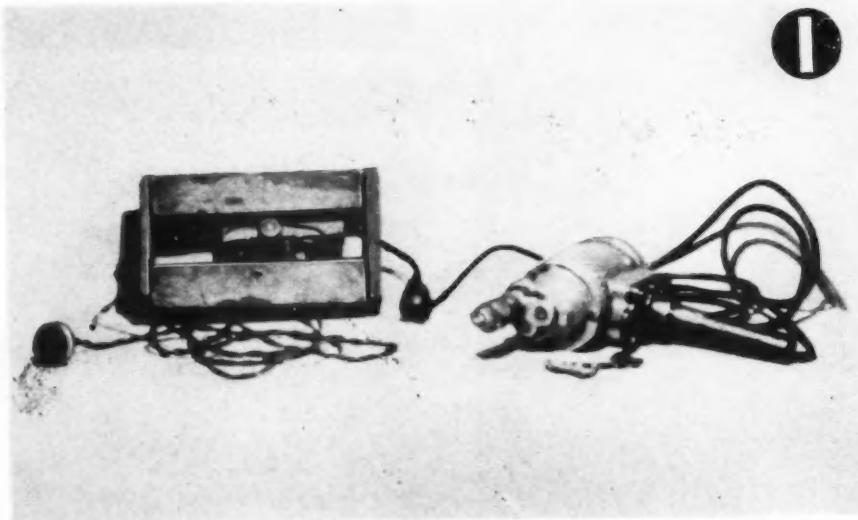
5



SHOP HINTS from fleet shops



Commercial Car Journal Will Pay 5 Dollars for Each Shop Hint Accepted. Ideas



1. Foot Switch

By Preston R. Coleman

Rainey Wood Coke Co., Norristown, Pa.

We have found a foot switch a very handy device for use in connection with an electric drill. On some operations both hands are required to hold the drill steady if the job is to be done right. The switch is made from almost any direct foot starter switch mounted in a box frame 8 in. by 10 in. and 3 in. deep. Drill holes in the 8 in. ends for wires to go through. An electric plug and socket and 10 ft. of double wire is all that is needed. The switch can be used for other electrical appliances.

2. Tail Light Extension

By Frank P. Coloumb

Emsco Concrete Cutting Corp., Los Angeles

When loads extend beyond the end of the truck we bolt a little fibre board onto the rear cross member. The part of this fibre block not in contact with the frame is covered with a brass plate and has a machine screw through it that acts as a terminal for a wire that is tapped into the tail light wire.

Then a double contact clearance lamp is wired to two C clamps one clamped to the fibre boards on top of the brass plate and the other to a suitable ground. There is a bracket on the clearance lamp to fasten it to the load.

3. Battery Charger

By Greaves Morris

Bellefonte, Pa.

Our truck fleet has no set schedule of runs day or night. Frequently batteries get low unexpectedly and other times they stay up for months. Since we never know when any truck must go to work we decided that we wanted a battery charger that did not require taking the battery out of the truck.

We rigged up a 1750 r.p.m. electric motor directly connected to a spare generator and mounted them on a little castored wagon. The

motor is hooked up to the house current and from the generator we run one No. 10 wire to the generator side of the cut-out relay and another to a ground on the truck.

This arrangement gives quick boosts without removing the battery.

4. Brake Spring Retainer

By Lester Cove

Watiz Meat Co., Newark, N. J.

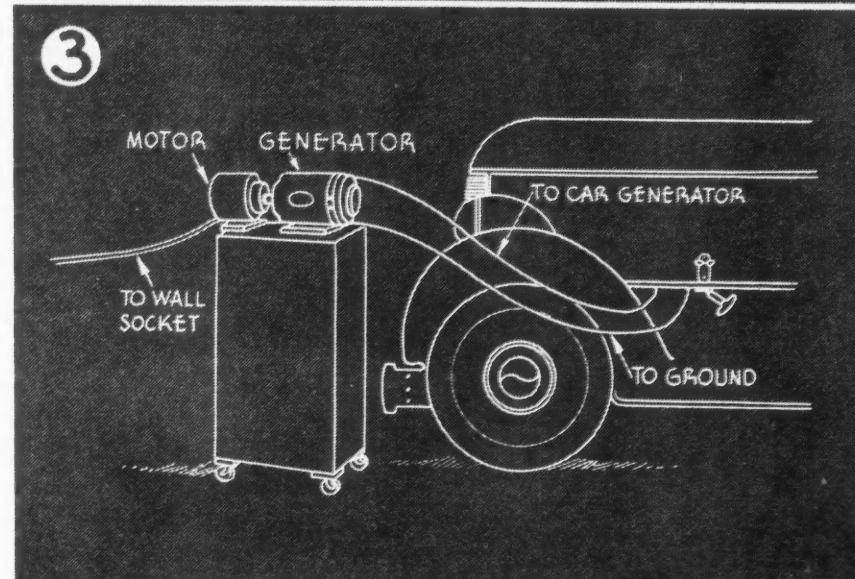
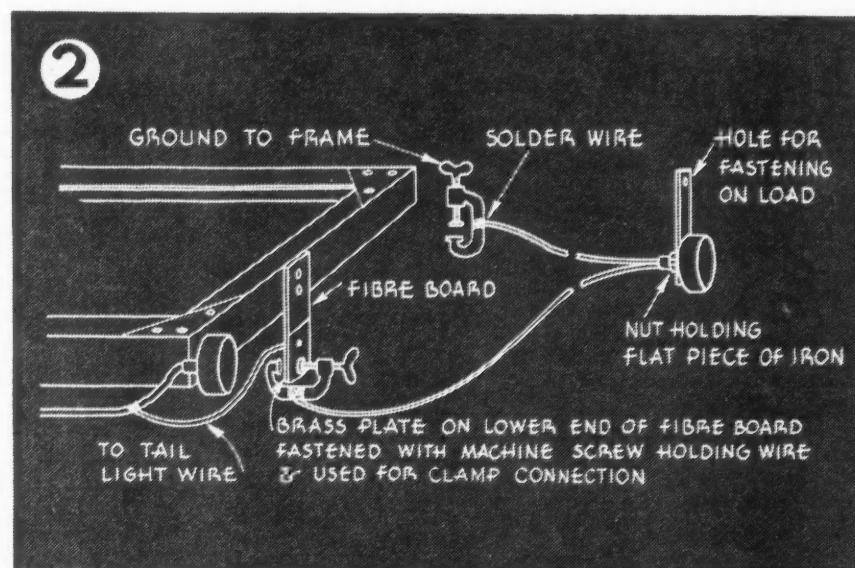
We had quite a time replacing the brake pull rod spring on all Ford V8 models when they were taken off. They are difficult to get at and it is almost impossible to hook them onto the chassis without a special tool. To get around this trouble we took a 3-16 in. by 2½ in. cotter pin and hooked the spring through the eye. The ends of the cotter pin can be entered into the hole in the cross member without any difficulty and then the cotter pin can be pulled easily with a pair of pliers. When the cotter pin has been pulled all the way up the ends can be spread without difficulty and the spring is securely anchored in place.

Radiator Clearance

By Floyd O'Neal

Huber and Huber Motor Express,
Knoxville, Tenn.

On the 1938 International model D35 insufficient space has been al-

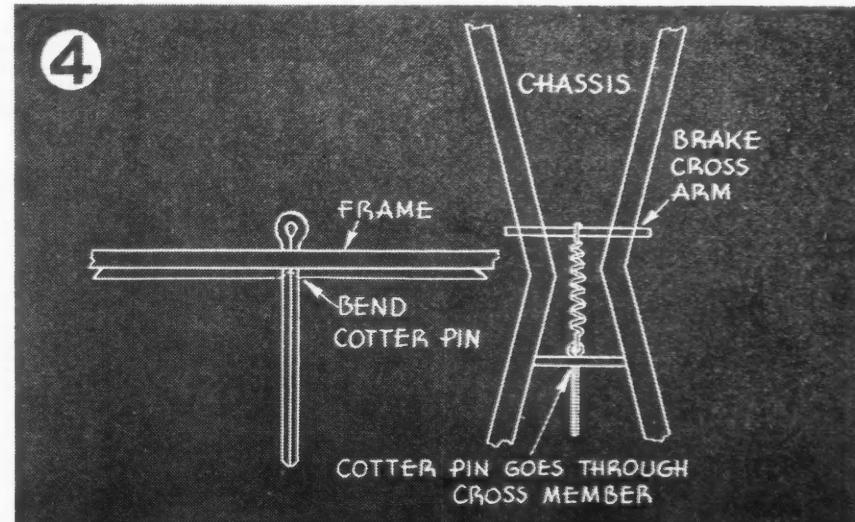


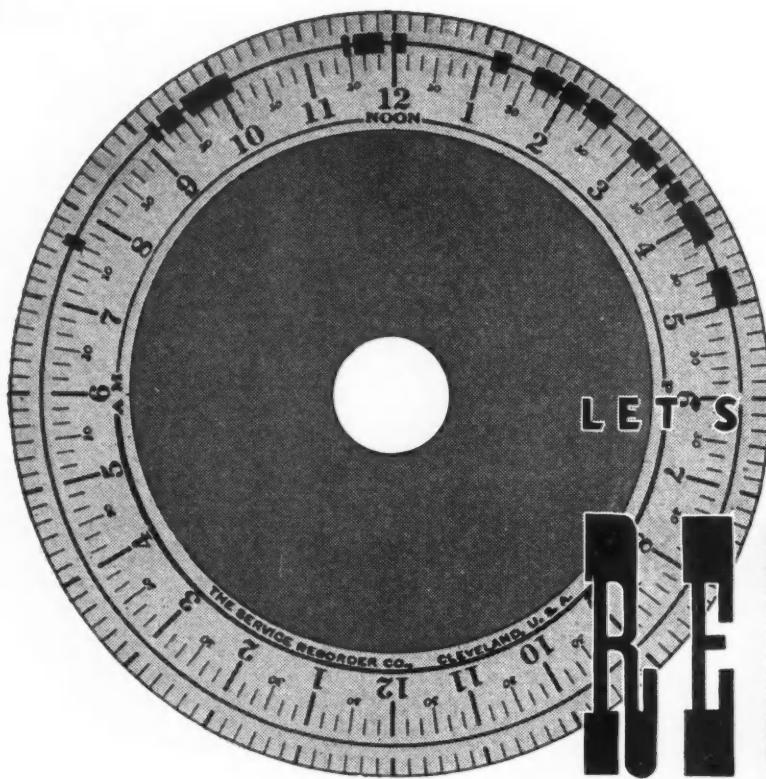
Count . . . No Matter How Roughly Sketched . . . We Will Polish Them for Publication

lowed between crankshaft balancer and radiator for easy installation of new fan belts. Forcing the belt through the narrow opening usually results in ruining the belt.

To avoid this, cut out ½ in. of the bottom radiator bracket bar with a torch and weld a quarter circle piece of iron across the opening as a brace, thus providing more space to get the fan belt through. It not only saves fan belts but saves loosening bolts and raising radiator every time it is necessary to replace the fan belt.

This same idea can be used on other makes and models.





LET'S LOOK AT THE RECORDER

HAVING used time-recording devices on Walgreen trucks for the past 12 years, we now consider them a necessary part of our equipment for efficient trucking operation. We are keeping daily time records on the 39 trucks which serve the 205 Walgreen stores in the "Chicago area"; and they are also being used on all other company-owned trucks which serve our 315 additional stores in other cities from coast to coast.

Following are some of the results from our use of these devices:

1. Help us maintain good working "time" relations with drivers.
2. Afford a check-up on efficiency of our dispatching system.
3. Aid in promotion of good safety practices by drivers.
4. Help in reduction of maintenance cost of trucks.
5. Check on cooperation of stores with our pick-up and delivery.
6. Save time of drivers in pick-ups at other warehouses.
7. Help in control of minor operating costs.
8. Essential to proper distribution of trucking time.
9. Reports on "average minutes

Drug store fleet gives you a look at the record of its recorders and tells how they are used to raise efficiency and lower accident and maintenance costs

By DONALD HAASE

Fleet Superintendent, The Walgreen Co., Chicago



MONTH OF April DAILY TIME RECORD							TRUCK NO. 96
DATE	TIME IN HOURS AND MINUTES			STANDING TIME ANALYSIS			DRIVER
	TOTAL STANDING TIME HRS. MIN.	TOTAL LOADING TIME HRS. MIN.	TOTAL RUNNING TIME HRS. MIN.	TOTAL STANDING TIME IN MIN.	TOTAL NUMBER OF STOPS	TOTAL NUMBER OF MIN PER STOP	
1 5 05	6 45	3 05	44	6.9	Newman		
2 3 05	5 30	1 85	37	5	"		
3							
4 5 45	40	6 45	3 45	44	7.8	"	
5 4 45	5 40	2 85	42	6.8	"		
6 6 15	30	9 00	3 75	39	9.4	"	
7 6 25	- -	7 00	3 85	40	9.6	"	
8 5 05	35	6 55	3 05	42	7.3	"	
9	Shaf	"					
10	"						
11	"						
12							
13 6 50	6 15	4 10	37	11.1	Newman		
14 6 30	5 36	3 90	37	0.5	"		
15 6 00	1 15	6 15	3 60	37	9.8	"	
16 4 25	30	5 10	2 65	33	8.0	"	
17							
18 6 25	45	6 10	3 85	38	10.4	Newman	
19 4 45	50	5 40	2 85	39	7.5	"	
20 5 50	50	6 00	3 50	37	9.4	"	
21 5 20	40	5 20	3 20	41	7.9	"	
22 6 00	50	6 10	3 60	37	9.7	"	
23 5 00	- -	4 35	3 00	37	8.1	"	
24							
25 6 20	45	6 20	3 80	37	0.3	Newman	
26 4 45	1 15	5 30	2 85	39	7.3	"	
27 6 10	50	6 10	3 70	36	10.3	"	
28 5 10	30	5 10	3 10	42	7.4	"	
29 5 55	40	6 20	3 55	40	8.9	"	
30 4 45	- -	5 05	2 85	35	8.1	"	
31							
TOTAL							
Daily Average							

MONTHLY TRUCK REPORT June, 1938.																			
Average minutes per stop																			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
5									9.8	(Repair Dept)									
10										12.4									
15											13.7	"	"						
20											14.0	"	"						
21	Not in service																		
22	5.0 (Commissary Dept)																		
23	6.2	"	"																
35																	16.0 (Milk Truck)		
40																	17.0 (Pickup Freight)		
55	5.9 (Special Delivery)																		
60	5.6 (Commissary Dept)																		
61	5.1 (Special Delivery)																		
62	5.5	"	"																
63										12.4	(Store Delivery)								
68									11.0		"								
71									11.5		"								
75									10.5										
76									9.9										
77									11.2										
78	5.0 (Special Delivery)																		
79	Emergency Tractor								9.0	(Loop commissary)									
80																			

Code:

5	W. Trumbley	36	W. Ponansky	60	W. Grom
10	J. Quinn	40	E. Mc Cann	71	C. Snodgrass
15	M. Canon	60	G. Smed	72	W. Dunk
16	R. Crawford	61	H. Wingert	73	C. Avery
21	W. Brundage	62	A. Trinosky	74	E. Smith
22	J. Mahoney	63	W. Spencer	75	V. De Merit
23		90	S. Neuman	76	

per stop" are valuable for supervising activities.

We call these recorders "the man in the cab," and our drivers fully understand how they operate and the use that we make of the daily time charts. This is a part of our instruction for all new drivers and helpers; and we have occasion to use time charts or tabulations from them in practically all monthly get-together meetings of drivers for discussion of their problems.

The daily charts have been valuable in impressing on our drivers the importance of promptness, the value of saving single minutes. Likewise, we know exactly how many delivery stops the driver has on his docket for the day. Hence, any other extended periods of idle time which show on his daily chart, excepting his regular lunch period, must be "explained" by the driver; and also any excessive amount of time taken for a delivery. Thus, the time recorder also stimulates the driver to return

From the Recorder disc shown on opposite page, a daily time record of each truck's movement (above left) is accumulated and summarized in the monthly truck report (above right). At lower left, one of the newer Walgreen tractor-trailer delivery units

promptly from his last delivery back to our warehouse headquarters.

Such promptness serves several practical purposes. First, if the driver should arrive back 20 to 30 minutes before his regular quitting time, it often happens that the dispatcher has an extra short-time delivery which the driver easily can make within his working day. But if it happens that there is no such extra delivery, then his time chart for the day shows that he has the privilege of quitting 20 to 30 minutes early.

But the next day, there may be good reason why the driver's scheduled deliveries will require 20 to 30

minutes of overtime. This develops a trading situation; and we have found that a driver usually is willing to "forget about" his own little periods of overtime, in exchange for the chance to quit a little early when there is no extra work to do. Thus, our time recorders are helping us to keep down overtime bother and expense.

It might be thought that some drivers, when they know that they have either a short delivery docket for the day or a small volume of merchandise to handle, would be able to "spread out" their average time per delivery, and thus lighten their work and also use up their full period of working hours. Here again, our daily time charts, under the supervision of Dispatcher Max Backow nicely take care of the situation.

Dispatcher Backow, who handles the details of the time records, has been a driver himself and is thoroughly acquainted with all delivery

(TURN TO PAGE 66, PLEASE)

THE
BODY
OF-THE-MONTH



This is the fourth in Commercial Car Journal's series of original body designs. Again we remind fleets that the designer has worked in body shops and knows the practical problems of building truck bodies. All designs are copyrighted but arrangements can be made with the designer for procuring complete construction drawings and specifications. Address The Editor, Commercial Car Journal, Philadelphia, Pa. Next month—a rack side body for contractors, lumber yards, etc.

DESIGN No. 4 . . . ICE CREAM BODY FOR A COE CHASSIS . . . ALL MATERIAL



VOCATIONAL USE

This month's design features a 630-gallon ice cream delivery unit which could be mounted on any standard cab-over-engine chassis.

DESIGN FEATURES

It is designed along modernistic lines rather than the long sweeping streamlines of previous designs. Featured are straight lines and circles with generous corner and roof radii, a departure from the long sweeping lines of present-day designs.

Excellent visibility is obtained by the use of curved glass in the windshield. Plexiglass might also be used at this point, to keep the cost down, this however needs more care and attention than glass.

Twisting between the body and cab is dampened by the use of a sponge rubber spacer. This gives a smooth continuous line between the two units.

BODY MATERIALS

The straight lines and simplicity of the design lend it well to any type of construction now in use. Material

suggested is all balsa wood side walls, frameless, with hardwood inserts for door frame, panel and moulding attachments. The floor would be cork laid over a wood sub-floor supported by formed steel light-weight cross bars with wood chassis rails.

Panels would be one-piece, full-height metalwood with body steel skirts moulded with aluminum and stainless steel snap-on trim mouldings. The roof would consist of a thin layer of balsa wood above the tanks the remainder of kapoc insulation. Roof bows would be laminated plywood, tago glued with wood lath, padded and covered with duck, filled and painted to suit the color scheme.

The ice cream tanks would be made of galvanized steel, lap-jointed and soldered to make them watertight. They could be refrigerated with any good modern system of refrigeration.

The doors are three-stepped rubber gasketed with refrigerator door hardware. The piano hinges are suggested for appearance only.

By offsetting the floors of the front and rear compartments down the height of one can the capacity could

be increased to 770 gallons. This, however, does not leave any space for empty cans or a mechanical refrigerating unit.

ILLUSTRATIONS

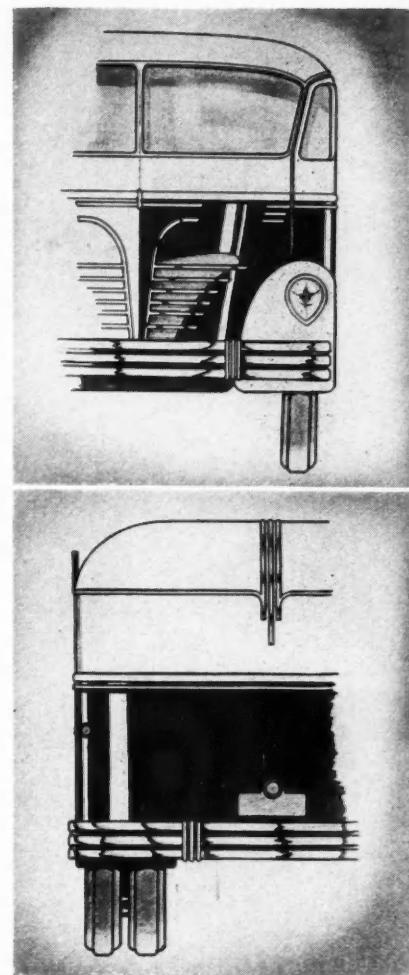
Opposite page—the side view of the complete unit shows the striking effect made possible by the use of long straight lines broken only by the wheel housings. Raised lettering adds much to the appearance.

Below — Front and rear views, emphasize the exceptional driver visibility made possible by the curved glass windshield and the graceful rear-end contours.

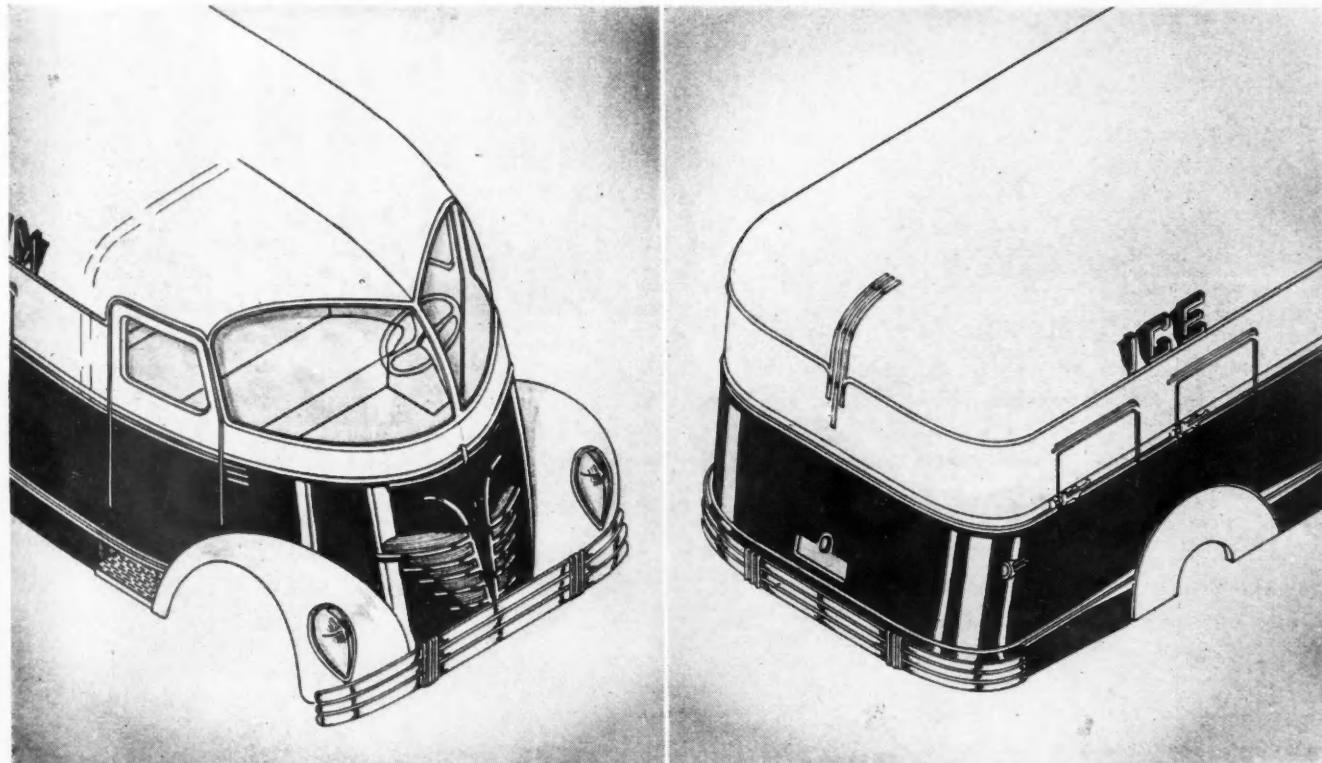
Right—Again, the front and rear views showing greater detail. Note the chromium treatment at top of rear contours.

ECONOMY POINTERS

The cost of the body could be reduced somewhat by the use of straight glass in the windshield, plain steel snap-on mouldings, by painting the lettering directly on the panels, and by using channel steel bumpers. Otherwise it should be a fairly simple unit to build.



PREPARED AND COPYRIGHT 1939, BY E. M. WESTBERG, BODY DESIGNER





Top: Diamond Ice & Coal's modern brick garage houses all service operations for the 108-vehicle fleet

Above: Maintenance Superintendent Brady Willy enters a service item on the 2 ft. x 3 ft. master record

Opposite page top: The shop handles all its own painting. Here a refinished truck is getting new decals

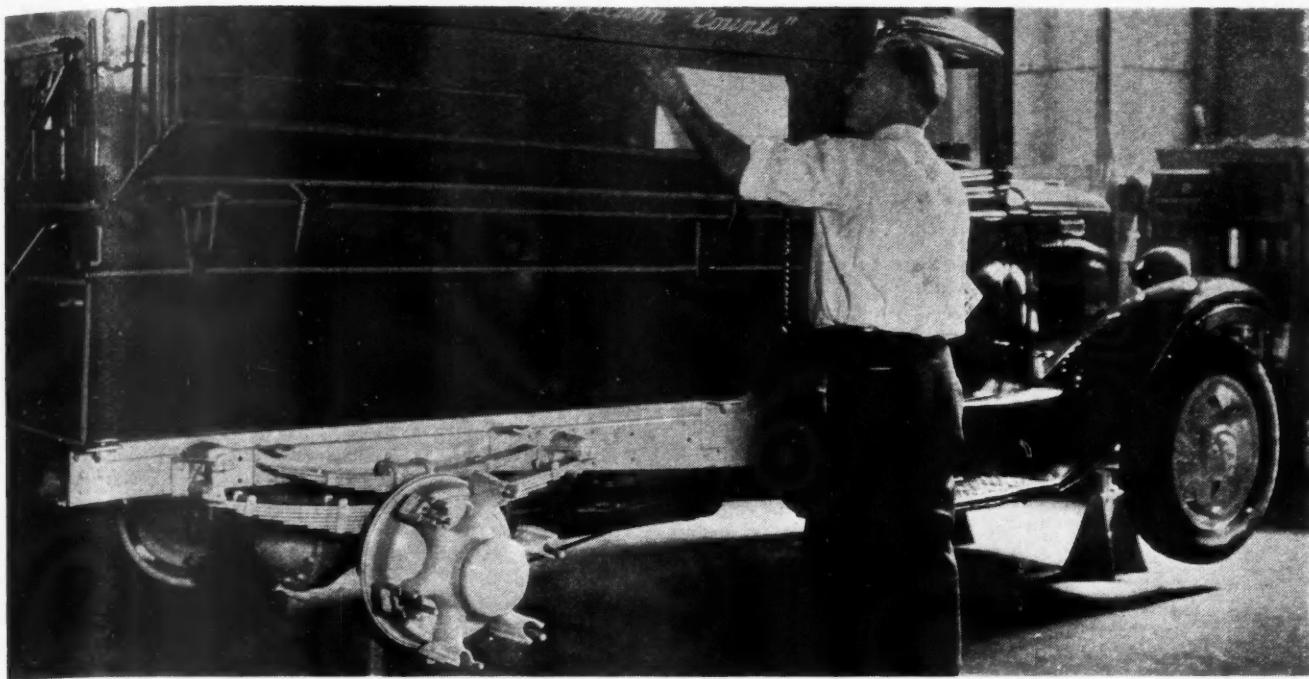
Opposite page bottom: Two of the company's new insulated ice trucks

COAL AND ICE FLEET

FREEZES Out Waste

. . . and boils down maintenance cost by centralizing service in a modern shop that has cut the lubrication bill by 25 per cent and road repairs in half

By C. C. HARRINGTON



MOST fleets go into preventive maintenance one step at a time. However, the Diamond Ice & Coal Co., Wilmington, Del., operating 108 vehicles ranging from 15-ton trucks to salesmen's coupes, made the whole distance in one jump. In less than one year's operation several results already stand out. The maintenance cost has been cut sharply and the road failures show a 50 per cent reduction.

The whole thing started early in 1938, following the completion of a new, brick building to be used entirely for maintenance. With this completely equipped shop ready, all service jobs for the entire fleet were centralized at one point. Previously such jobs as greasing, oil change and minor repairs were handled at each of the several garages where the various trucks were stored. Upon the application of centralized maintenance, there immediately resulted a surprising saving in lubricants. At the end of the first month after the inauguration of the new policy, there was recorded a 25 per cent saving in lubricants. This saving, due to having all grease and oil change jobs done at one central point, has since been even further increased, and has well warranted the changed policy.

By establishing a central point to handle all lubrication, the company

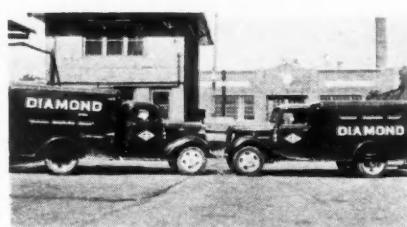
has been able to put a mechanic skilled in this phase of service in charge of greasing and oil changing. Previously, chassis greasing was done in a rather hit-or-miss manner, many trucks receiving a complete grease job every week, whether their mileage warranted it or not. By the centralized system, mileage records are kept and each truck receives a greasing when it comes in for the 1000-mile inspection. The saving in crankcase oil under the new method has been sufficient to pay the salary of the night mechanic. The service of a skilled lubrication man in charge of oil changing, has permitted a wider and more efficient use of oil filters. To keep the oil in the best possible condition, filter elements are changed every 500 miles. This feature, together with the skill of the lubrication man in determining when oil needs changing, has resulted in a remarkable decrease in the amount of oil used. Instead of having several unskilled greasers watching the

oil at every garage point, which naturally resulted in much good oil being drained and wasted, the single expert at the central shop can see that the oil is utilized to the fullest extent. In addition there is less waste of oil and grease from one central station than there was at several service points.

The next step after establishing a central service point, was the inauguration of a preventive maintenance system. Previously scheduled overhauls were more or less haphazard and dependent upon the condition of the vehicles. The result was that frequent road failures kept the company's heavy wrecker and panel repair truck hopping around the city and countryside. Under these conditions maintenance costs were far from a minimum. In addition, shop repairs were all out of proportion to what they should have been.

Immediately following the application of a preventive maintenance policy, road failures dropped 50 per cent, and shop repairs were largely replaced by routine service jobs. The system was at once a money saver, both in lower repair bills, and in the time necessary to keep vehicles off the road. Inspection and mechanical adjustment largely replaced actual repairs, and the performance

(TURN TO PAGE 74, PLEASE)



HYDRAULIC brakes have replaced mechanical brakes on all Ford cars and trucks for 1939. The shop will welcome the change. Ford brakes will no longer be a maintenance problem. The new brakes are easy to maintain and they will provide more satisfactory operation so far as the driver is concerned.

The brakes are the two shoe type individually anchored. Each shoe is provided with a cam adjustment at the top to compensate for lining wear. Each anchor is on an eccentric to locate the shoe. The master cylinder is mounted directly to the pedal bracket.

Listed below are service instructions for the new brakes.

Minor Adjustment

1. Jack up car so that wheels are free of floor.
2. Turn cam adjustment (A) controlling front shoe clockwise or toward front of car until front shoe is against the drum.
3. Back off as little as possible and still have wheel turn freely without dragging.
4. Turn cam adjustment (A) controlling rear shoe counter clockwise until shoe is against drum.
5. Back off as little as possible and still have wheel turn freely without dragging.
6. Repeat operations 2, 3, 4, 5, on the other three wheels.
7. Check pedal for $\frac{1}{4}$ in. to $\frac{1}{2}$ in. free travel measured at the pedal pad.

Pedal Adjustment

8. Loosen lock nut (C) on pedal rod.
9. Turn adjusting nut (D) on pedal rod until pedal has correct amount of free travel.
10. Tighten lock nut (C).

If after this adjustment there is not $\frac{1}{2}$ of the total brake pedal travel left as a reserve when brakes are fully applied it is probably due to faulty adjustment which means that the outlined adjustment must be performed over again more carefully or that the brakes need a major adjustment.

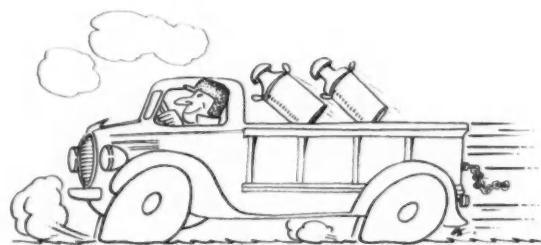
Major Adjustment

11. With car jacked up, apply

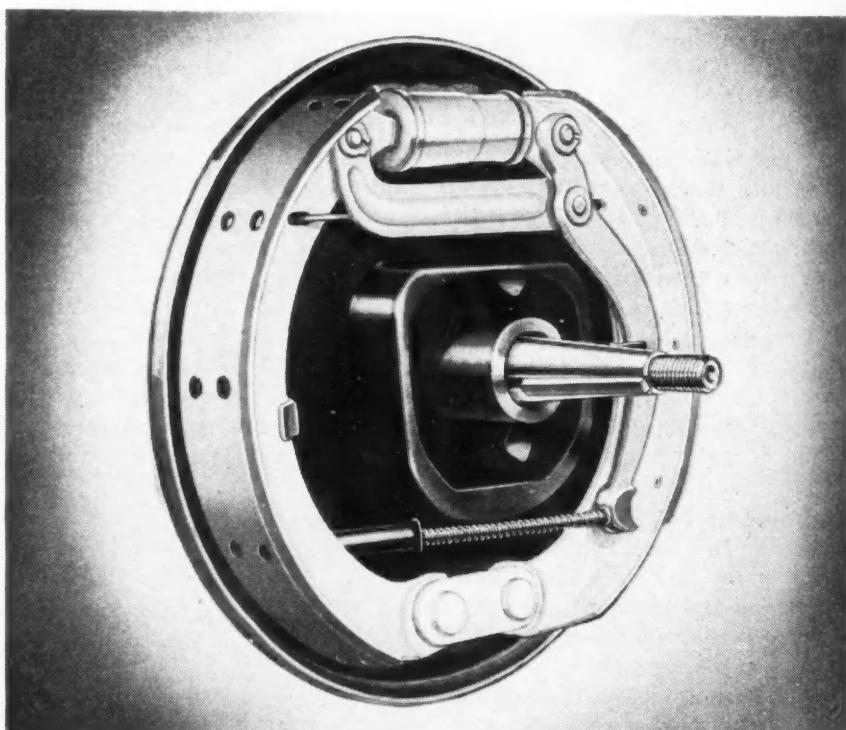
FORD HYDRAULIC

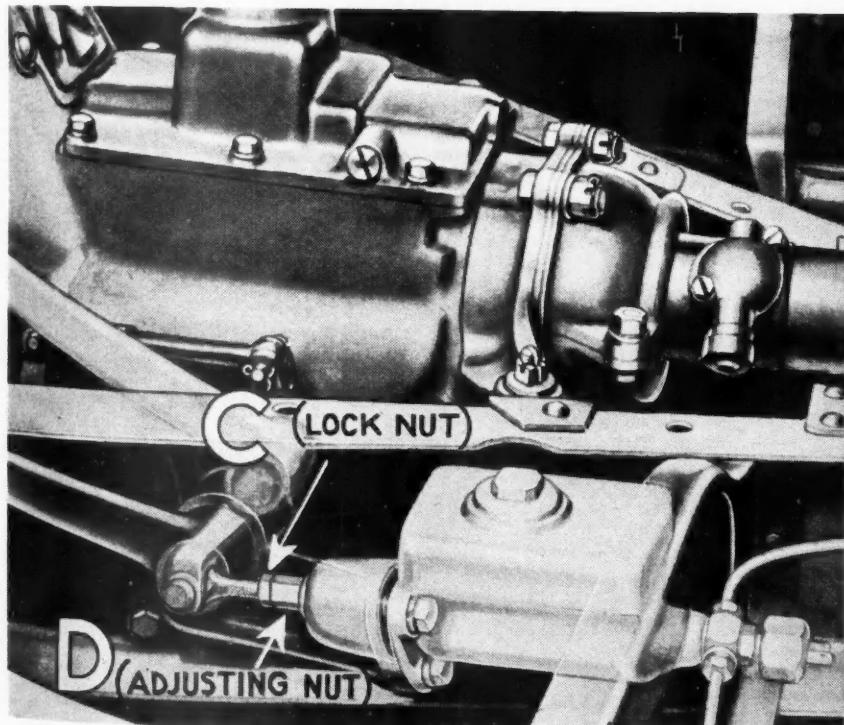
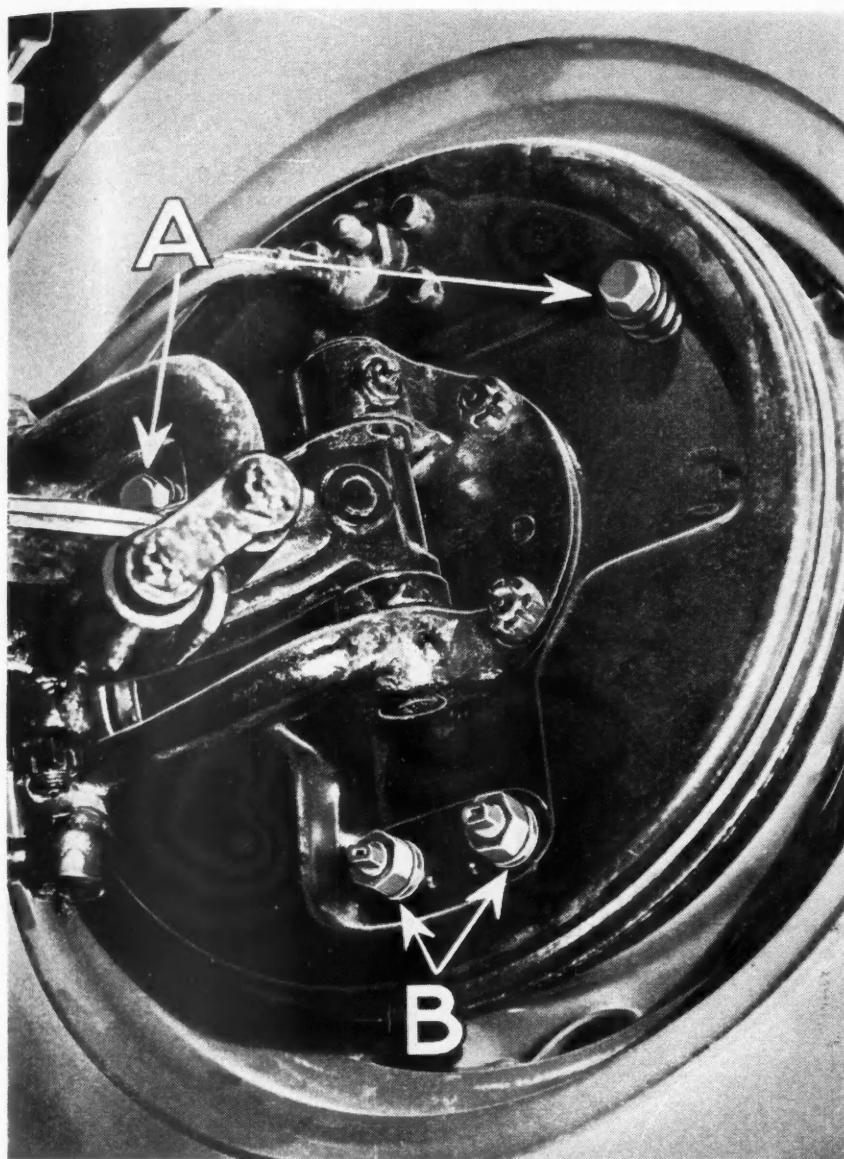
BRAKES

Step-by-Step Details on How to Adjust Them



Below: The Ford hydraulic brake. **Opposite page, top:** Backing plate showing cam and anchor adjustments. **Below:** Pedal assembly showing travel adjustment





brake jack so that there is a light pressure on the pedal. (Ford recommends 25 to 35 lb.)

12. Loosen lock nut on anchor adjustment (B) controlling front shoe.

13. On anchor adjustment there is a mark showing the high side of the cam. With new lining the marks on mating anchor adjustments would be toward each other. Turn this mark down gently until you feel the shoe touch the drum.

14. Tighten lock nut making sure that adjustment is not changed.

15. Adjust anchor (B) controlling rear shoe in the same manner.

16. Repeat operations 12, 13, 14, 15 on other three wheels.

17. Adjust clearance as outlined in operations 2, 3, 4, 5, 6.

Ford recommends that the top clearance be adjusted before the anchor clearance. Commercial Car Journal recommends the more accepted practice of adjusting the anchors first and then the top adjustment. Of course, in adjusting newly relined shoes or brakes far out of adjustment it is necessary to get at least an approximate top adjustment, then set the anchors and then return to the top adjustment for final clearance.

To Remove Shoes

18. Place C clamp or wheel-cylinder clamp on wheel cylinder.

19. Turn high side of cams on upper adjustment towards each other.

20. Remove anchors.

21. Spread anchor ends of shoes and remove shoes from under retaining springs.

22. Bring anchor ends of shoes together and cross them until upper ends of shoes clear cylinder.

To Reinstall Shoes

23. Install retracting spring and make sure that primary shoe is in front position.

24. Cross anchor ends of shoes so that top ends will enter pistons.

25. Spread anchor ends of shoes until they enter clips.

26. Install anchors so that high sides are toward each other.

27. Remove cylinder clamp.

28. Install wheel and give shoes major adjustment.

MISER Models

Commercial Car Journal again presents a summary of economy models which are currently offered by leading manufacturers as their contribution to fleets that are willing to swap performance for a lower operating cost



FOR the third year Commercial Car Journal presents a description of the economy models offered by various manufacturers for fleet use. This report does not give the details of entire vehicles. It points out the differences between the regular production vehicles and the models which are modified to give greater economy of operation.

CHEVROLET

Chevrolet has several economy options. Such models are identified by a plate on the instrument panel which reads — "Performance and speed of this vehicle have been curtailed to obtain lower operating cost." There is also a plate attached to the rocker arm cover which gives tune-up specifications where they vary from standard.

A smaller carburetor is used, the

main venturi of which is 1 1-16 in. in diameter instead of 1 1/4 in., the standard size. The main jet is smaller, 0.0835 in., and a special metering rod is used to bring the calibration to the most efficient point at the various speeds and loads. A throttle-stop also is provided.

For hilly regions, provision has been made for removing the throttle-stop and installing a new throttle rod for full power restoration. However, due to the smaller venturi, maximum speed is reduced about 5 m.p.h. and acceleration is cut somewhat.

A sheet metal cover incloses the front half of both inlet and exhaust manifolds to increase the temperature of the fuel mixture and the thermostat in the cylinder block water outlet is set for 162 deg. F. Where desirable it is possible to have a velocity type governor installed, adjust-

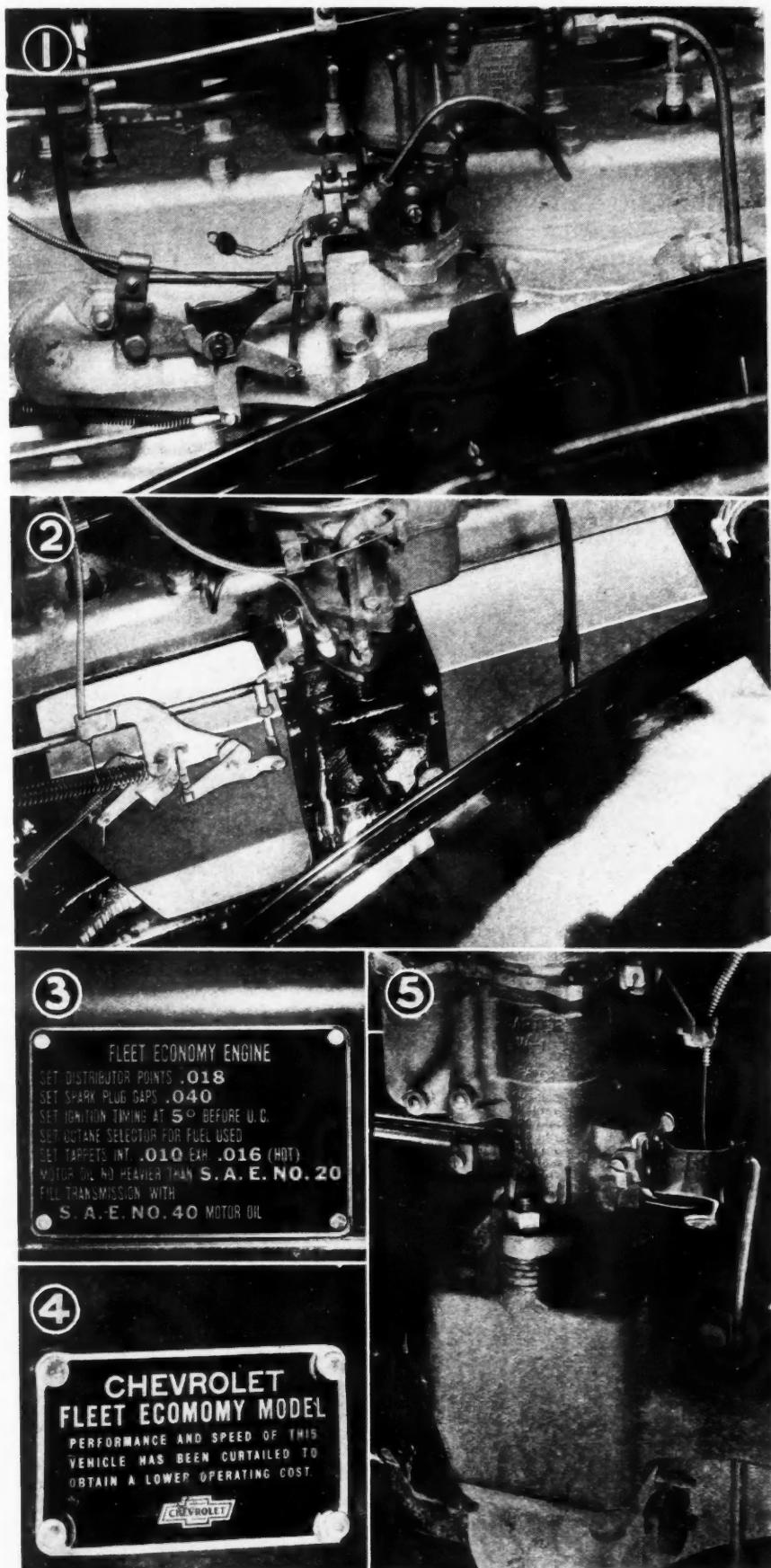
able in the range from 1400 r.p.m. to 3000 r.p.m.

DODGE

The 1/2-ton TC model, the TD-15 3/4-ton model, and the TD-20 and TD-21 models are available with a 1-in. carburetor instead of the larger size. The TE series of 1 1/2-ton trucks may have a 1-in. carburetor and 6.5 compression ratio with a vacuum spark advance instead of the standard 5.8 head and a mechanical spark advance. A throttle-stop or governor is available for all models.

FORD

For the 85 hp. engine an economy carburetor is offered with 13-16-in. throttle opening, 0.81-in. venturi and 0.035-in. jets, replacing the standard carburetor which has 0.97-in. venturi and 0.045-in. jets. It is avail-



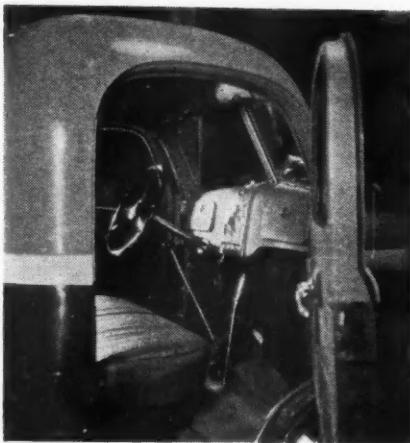
Dodge (1) and Plymouth (2) offer smaller carburetors; the latter adds manifold shielding. Chevrolet identifies economy models on engine (3) and instrument panel (4), offers smaller carburetor (5) and shielding

able for passenger and commercial cars and also for light trucks.

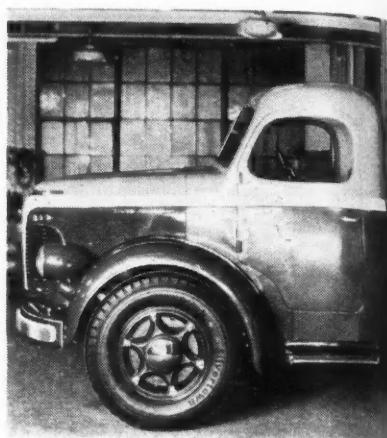
PLYMOUTH

Plymouth equips economy models with a special intake manifold and a 1-in. carburetor instead of the standard 1½-in. carburetor. The engine will develop 65 hp. at 3000 r.p.m. with this equipment and it is used with a 3.7 to 1 final drive ratio on de luxe models; or 3.54 to 1 on Roadkings. Top speed is limited to about 65 m.p.h. and acceleration is cut about 15 per cent below 40 m.p.h.

In addition to this equipment there is hardened steel throttle-stop which limits speed to 45 to 50 m.p.h. This may be altered for higher speed if desired. Manifold heat shields are a part of this package, the purpose being to increase the heat of the mixture in the manifold.



REO



Restyles and Redesigns

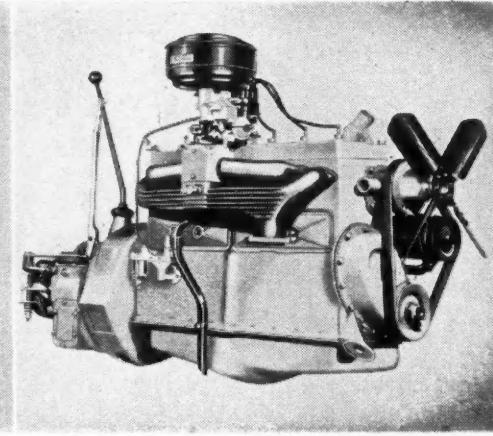
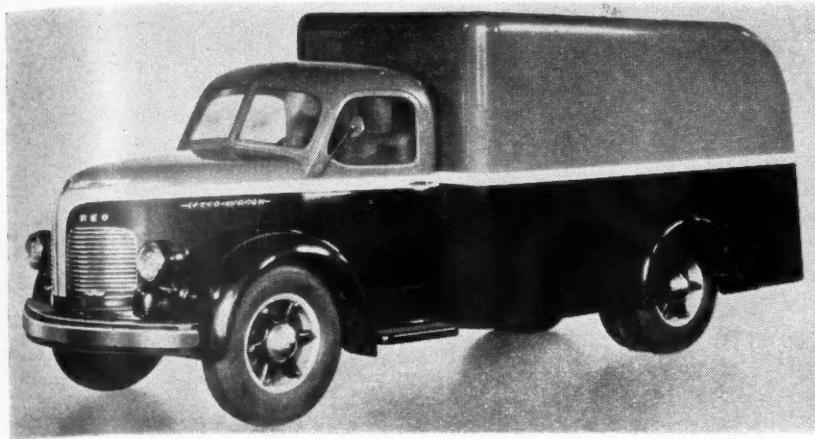
Five new models feature advanced styling, increased CA dimensions and interchangeability of major units



Right: Front end

Across the top:

COMMERCIAL CAR JOURNAL
JANUARY, 1939



FIYE new models feature the Reo line for 1939. The models ranging from a gross rating of 11,000 lb. to 18,000 lb. have been completely redesigned and re-styled. The net result is entirely pleasing to the eye and startlingly different.

The front wheels are set back so that the distance from the curved front bumper to the center of the axle is $40\frac{1}{4}$ in., leaving the radiator and most of the hood overhanging in the front. Entirely aside from weight distribution advantages the set back axle type of construction provides the basis for an entirely new front-end treatment which is further enhanced by the balance of the design.

The rounded hood covers the engine and the radiator. Two grille-covered openings permit the intake of air for the radiator. The entire hood, including the grilling, lifts up in the front, exposing the engine which is easily accessible.

The model rated at 11,000 lb. gross is powered by a new Gold Crown engine having a $3\frac{1}{4}$ in. bore and a $4\frac{1}{4}$ in. stroke, giving 212 cu. in. of piston displacement. Torque is 160 lb. ft. at 1000 r.p.m. Lo-Ex, cam-ground, T-slot pistons are used. The engine is also equipped with alloy exhaust valve seats.

This engine is also standard in the model 12 which is a 12,000 lb. gross model. A 245-cu. in. engine is available at extra cost in either model.

The model 11 has a 10-in. clutch and the model 12 has a 11-in. clutch. Both models have four-speed trans-

missions and both models may be equipped with a five-speed transmission having either over or under drive. The standard axle is a spiral bevel full-floating unit and double reduction or two-speed axles are available. Ratios range from 5.66 to 6.6.

Model 14, rated at 14,000 lb. gross, is powered by a 245-cu. in. engine having all of the Gold Crown features. This engine is $3\frac{1}{2}$ in. by $4\frac{1}{4}$ in. and has a torque maximum of 183 lb. ft. A 288-cu. in. engine is offered in this chassis at extra cost. Like the other models this one is equipped with a four-speed transmission while a five-speed over or under drive transmission can be obtained. Tires are 6.50/20.

Brakes on the models 11, 12 and 14 are internal hydraulic.

Models 16 and 18, rated respectively at 16,000 lb. and 18,000 lb., have air brakes. The interchangeability of axles and transmissions also applies to these models. Spiral bevel axles are standard but two-speed or double reduction axles may be obtained. Five-speed transmissions are available at extra cost. The model 16 is powered by the 288-cu. in. engine, which produces 212 lb. ft. of torque at 950 r.p.m., and there is the 310-cu. in. engine if it is desired. The model 18 uses the 310-cu. in. engine as standard. The torque of the 310-cu. in. engine is 228 lb. ft. at 900 r.p.m.

Models 11 and 12 have 264 sq. in. of brake lining area. Model 14 has 328 sq. in. All hydraulic brakes are

booster actuated. The air operated brakes on the model 16 have 388 sq. in. of lining area. On the model 18 the area is 436 sq. in.

Frames on the models 11 and 12 are $8\frac{13}{16}$ in. deep with $2\frac{29}{32}$ in. flanges. The stock is $5/32$ in. thick. Rear springs on these models are 50 in. by 3 in. while front springs are 40 in. by 3 in. Helper springs can be had at extra cost.

On the model 14 the depth of the frame is $8\frac{7}{8}$ in., the flanges are 3 in. wide and the thickness is $3/16$ in. Springs have the same dimensions as the models 11 and 12 but helper springs are standard equipment.

Nine-inch frames are used on the models 16 and 18. Flange width is 3 in. and thickness is $\frac{1}{4}$ in. Springs are again the same length and width with helper springs as standard.

Cast steel spoke wheels are used throughout. Worm and roller steering gears are used on models 11, 12 and 14. Cam and lever steering gears are used on the two larger models. All universal joints are of the needle bearing type. All models are equipped with oil clarifiers.

Cabs are styled to complement the front end treatment. Instrument boards are of the deluxe type with instruments grouped in the center and roomy compartments on both sides. Windshields are divided.

Standard wheelbases on all models are 120 in., 145 in., 165 in., and 200 in. Standard CA dimensions are respectively $59\frac{3}{4}$ in., $84\frac{3}{8}$ in., $104\frac{3}{4}$ in., and $139\frac{3}{4}$ in.

A cab interior, side view showing stepped-back front axle, a complete unit and one of the new "Gold Crown" engines.

GAR WOOD

ANNOUNCES NEW TRUCK-VEYOR AND LOAD PACKER

GAR WOOD INDUSTRIES, INC., Detroit, has announced a new truckveyor which offers a clean, quick and economical way to deliver coal by eliminating wheeling and shoveling and by reducing delivery costs.

The truckveyor consists of an aluminum-alloy frame supporting an 8-in. rubber belt on two 4-in. aluminum pulleys, one at each end of the truckveyor. The drive pulley has a right- and left-hand gear box operated by a flexible shaft which is connected to the truck power-take-off. Hinged baffle plates and extension sides on the conveyor frame are provided to prevent spillage. When not in use, the truckveyor is carried in a compartment in the body, or held on



New Gar Wood Truckveyor (top) and details of Load-packer

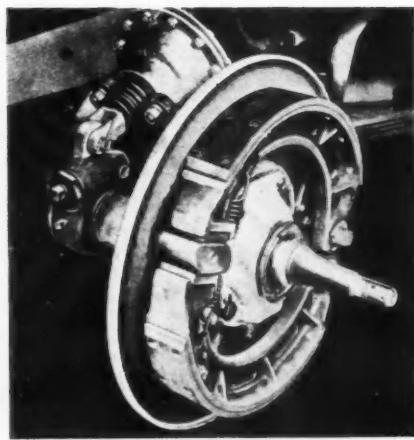
the outside by retaining brackets.

The new Gar Wood Load-packer is a modern, sanitary, all-enclosed body for garbage and refuse handling. It compresses all kinds of bulky rubbish into a compact, full-capacity load that is much greater in weight than the usual load.

A Gar Wood hydraulic hoist dumps the load in the usual way. Another set of cylinders opens the end gate.

while two compressing jacks thrust the ram packing plate and a special retainer plate against the garbage, completely cleaning out the loading trough. The retainer plate holds the load in place until the ram is used again. Controls are located at the rear of the body.

The load-packer can be built in various lengths and widths to fit any truck or trailer chassis.



Typical Eaton front brake assembly

EATON PRODUCTS, INC., Cleveland, Ohio, announces a new heavy-duty brake for replacement on 1937-1938 Ford, Chevrolet and some GMC trucks. It is of two-shoe rigid anchor, non-servo, constant-rise cam

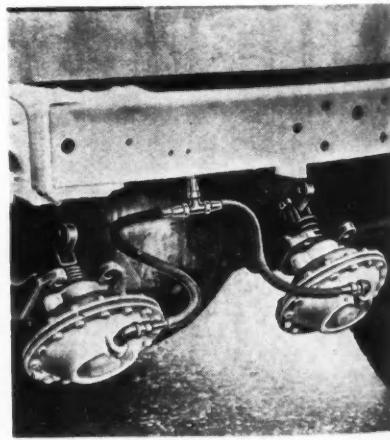
EATON

HEAVY DUTY BRAKE

... offered for replacement
on Ford, Chevrolet & GMC

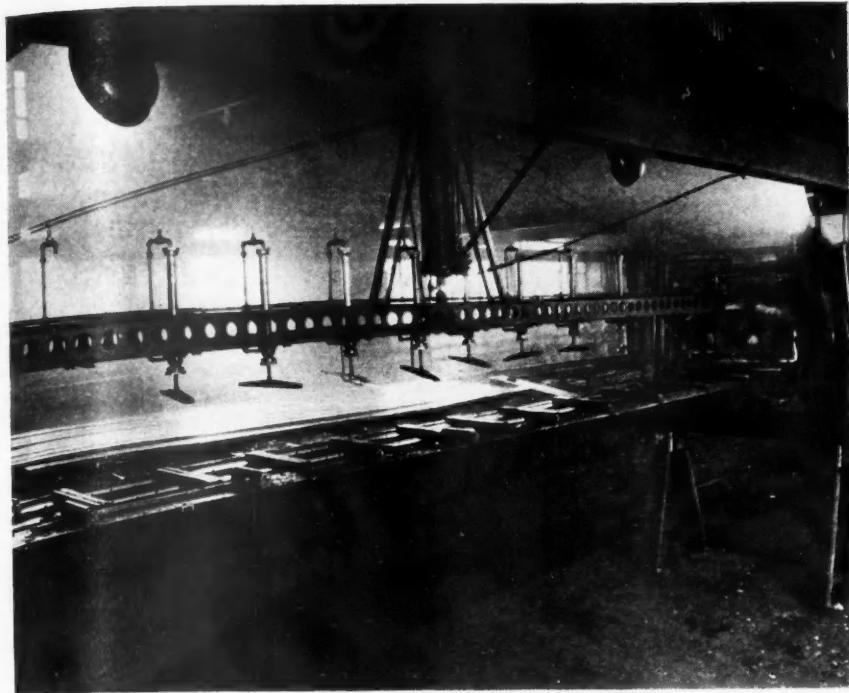
construction and is especially adaptable where abnormal service makes sturdier than standard brakes desirable. The brakes can be used with air or other power actuation.

The system is easily installed and



and usual rear air chamber mounting

replaces all previous brake rigging. Special drums are required only on the Chevrolet units. Distortion and rap-up are eliminated which contributes to longer drum and lining life.



View of motor truck frames undergoing a portion of the heat-treating process

FLEETS TURN ON THE

H E A T

FOR HEAT-TREATED FRAMES

Fleetmen's actual operating experiences, cited in survey, substantiate motives of vehicle designers

DESIGNERS who incorporate heat-treated frames in their trucks stress one particular reason for doing so. That reason is to provide a greater margin of safety against those overloads to the frame which

occur in every-day operation. When designing his vehicle the engineer does not know what load will be carried on it. He does not know at what speeds it will be operated. He does not know how many emer-

gencies — with their grueling brake applications — will be encountered. He does not know how severe will be the stresses imposed when the truck hits bumps and depressions in the road. But he must anticipate a certain degree of abuse and protect his design against it with the aforementioned margin of safety.

Designing engineers say they choose the heat-treated frame because it can absorb this abuse longer, oftener and to a severer degree than the non-heat-treated frame. Under a given pressure the heat-treated frame will bend just as much as a non-heat-treated frame. However, as the pressure is increased and the deflection becomes greater there comes a point at which the non-heat-treated frame will no longer return to its original position. It takes a permanent set with its consequent effect on operating costs. The same thing can happen to a heat-treated frame but only at a much greater pressure. Tests of sections of treated and untreated frame sets have indicated that the treated carbon steel frames have a 50 per cent and the alloy frames a 90 per cent greater elastic limit than non-treated frames.

This reasoning of designing engineers appears to be substantiated by the experience of fleet operators. A survey by COMMERCIAL CAR JOURNAL, previously reported in these columns and now brought up to date, procured a response from 145 fleets. Fleet operators who had had actual experience with heat-treated frames were asked to give an outline of experience which indicated that they increased the life of the truck, and to give the reasons why they favored heat-treated frames. Forty-two operators answered this query and of this number 28 went on record favoring heat-treated frames. The others indicated unfamiliarity with heat-treating or that their type of service was not severe on frames. The advocates of heat-treated frames did not hesitate to state the reasons for their approval. The reasons lined up as follows:

No breaking of frames — seven fleets.

No reinforcement needed — five fleets.

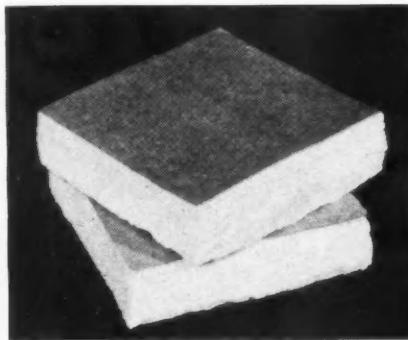
(TURN TO PAGE 91, PLEASE)

SHOWCASE

OF NEW PRODUCTS FOR FLEETS

Dry-Zero Now in Rolls

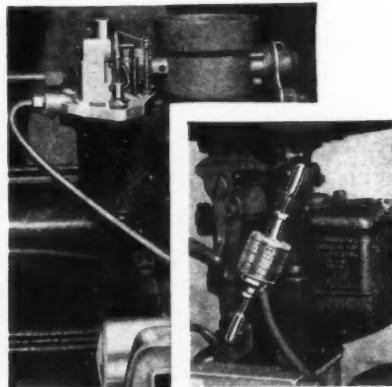
A new low-cost Dry-Zero insulation is available for the first time in rolls, making it possible to cut to fit, on the job. For this reason it is especially suited to limited production work. Known as Dry-Zero Bound-Batt the material is considerably lower priced, yet has the same insulating



effectiveness as other Dry-Zero products. Fibres of the new material are held together by a microscopically fine binder so that no external covering is necessary. It is available in thicknesses from 1 to 4 in., weighs only .8 lb. per cu. ft. Fleetmen interested may secure full details from Dry-Zero Corp., Merchandise Mart, Chicago, Ill.

Hoof Power Jet Controls

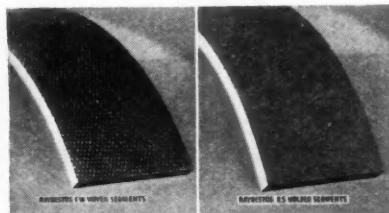
Two new Hoof devices meet a long-felt need for better fuel mixtures on cars and trucks equipped with all types of governors. The Hoof Vacuum Metering Control for Chevrolets and the Fuel Economizer



for Fords provide an automatic (vacuum) control of the power jet on these vehicles which is otherwise controlled by a manual linkage. The effect of the new device is to limit use of the power jet to periods of peak load only, thus preventing the over-rich mixture caused by "riding" the accelerator beyond the governed speed. Substantial fuel saving are claimed for the new devices. The illustrations shows the Chevrolet unit (left) and the Ford unit (insert). For full details write Hoof Products Co., 162 N. Franklin St., Chicago, Ill.

Raybestos Brake Linings

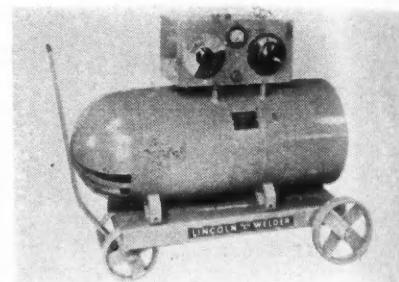
Two new rigid-friction brake lining materials, one woven and one molded, have been perfected by Raybestos. They are designed for use singly or in combination to meet the needs of every type of truck brake service. The new development should simplify the selection of brake lining for various types of units and services, particularly



in heavy-duty fleets. A quick-reference chart makes possible instant choice. Full details may be secured from Raybestos Division of Raybestos-Manhattan, Inc., Bridgeport, Conn.

Lincoln "Shield-Arc" Welders

A line of "Shield-Arc" welders, said to provide greater convenience and accuracy because of a new self-indicating dual continuous control, is announced by The Lincoln Electric Co., 12818 Coit Road, Cleveland, Ohio. These welders have both voltage and current control calibrated and equipped with dials which indicate the type of work and the number of amperes for each setting. Both controls are continuous in operation. It is claimed that this development enables the welding operator to secure highest quality welds and highest



possible welding speeds because he can vary both the slope of the volt-ampere curve and the amount of welding current independently and positively to suit every job encountered. Other features include a self-protected motor said to permit sustained operation with large electrodes and separate excitation of the welding generator. Full details may be secured from the manufacturer.

Jenkins Universal Valve

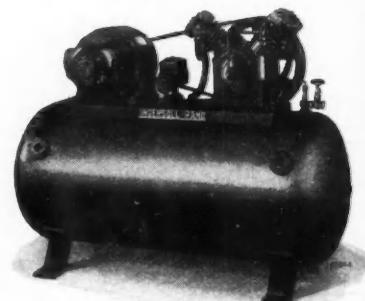
A new Jenkins capless tire valve for trucks and buses is now ready in both original equipment and replacement types. Because the valve has but one moving part—a conical plunger that fits against a



molded rubber seat—plus a simple stainless steel spring, it is said to be virtually indestructible. The unit is interchangeable on all sizes and may be used with single or dual wheels. For full details, write Jenkins Brothers, 510 Main St., Bridgeport, Conn.

Three New I-R Compressors

Three new two-stage compressors in the "Type 30" line for garage and service station use have just been introduced by Ingersoll-Rand. The new units in $\frac{1}{4}$, 1 and 3 hp. sizes are of the same design as the $1\frac{1}{2}$ and 2 hp. models introduced in



March. Characteristics include "V" arrangements of cylinders individually bolted to crankcase, simplified valve construction and copper-finned intercooler. Full details may be had from the Ingersoll-Rand Co., 11 Broadway, New York.

Bosch Fuel Oil Filter



Contributing to greatly increased life for injection equipment the new American Bosch sealed fuel oil filter is inexpensive and said to contain remarkable filtering properties. Because the new device is capable of removing virtually all abrasives, much longer periods are claimed before injection equipment need be overhauled. For full details, address the American Bosch Corp., Springfield, Mass.

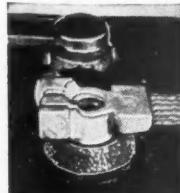
Dayton Fuelometer

A new gasoline metering device known as the Dayton Fuelometer provides an in-



expensive yet positive means of registering exact fuel consumption. It mounts on the inside or outside of the cowl of any vehicle in series with fuel pump and carburetor. Once installed it is tamper-proof and retains extreme accuracy over a long period of usefulness. One size gives capacity up to 22 gal. per hour. For full details, write the Dayton Fuelometer Corp., 727 Reibold Bld., Dayton, Ohio.

New Type Battery Washer

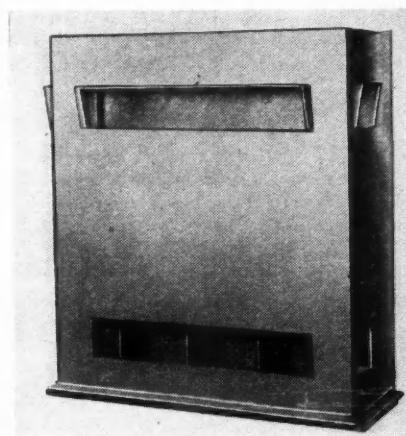


By the installation of a simple, inexpensive felt washer under each battery terminal, corrosion can be completely eliminated for at least one year without further attention.

These Non-Corrosive washers are chemically impregnated and prevent upward seepage of battery acids fumes, etc. Each washer is bored to standard size and can be applied in a moment. Better send for a free sample and complete details. Address Non-Corrosive Washer Co., Rockford, Ill.

Dry-Ice Refrigerator

For controlling the temperature in insulated trucks a new non-mechanical re-

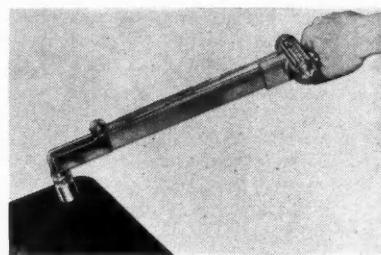


K-D Signacator

Of more than passing interest in the passenger car signal field is the new K-D Signacator. The complete device consists of four streamlined bullet-shaped lamps for each corner of the car and each with an amber arrow. The two rear lamps also incorporate a slo-light to warn following traffic. A switch under the steering column turns off automatically when the turn is complete. Full details may be had by writing K-D Lamp Co., Cincinnati, Ohio.

Blackhawk Torkflash

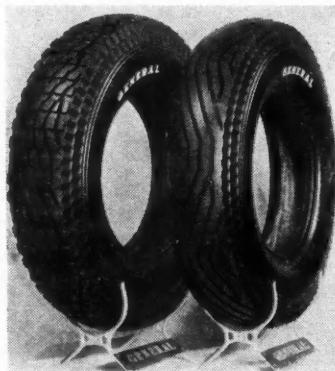
An unusually complete torque-indicating wrench known as "Torkflash" has been introduced by Blackhawk. Outstanding features include a five-way scale and an elec-



tric light which flashes at any pre-determined pull making scale reading unnecessary during the pull. The five way scale may be set to read in inch-pounds, foot-pounds, and for recommended pulls for spark plugs and U.S.S. and S.A.E. bolts. Full details of this unusual device may be secured from Blackhawk Mfg. Co., Milwaukee, Wis.

General "YRT" Tire

"Overshoes" for tires is the latest kink from General Tire & Rubber Co., Akron, Ohio. The company's new "YRT" (year-round tread) tire for passenger cars is equipped with hundreds of rubber lugs to supply utmost traction during winter



months. When the lugs are removed either by natural wear or buffing a standard tread is left for most efficient summer driving. Full details from the maker.

Auto-Lite Lens Line

A new line of Auto-Lite original equipment and replacement headlamp lenses has just been introduced and provides a type for practically every kind of automotive unit including many whose manufacture have been discontinued in the past decade. Each is trademarked exactly the same as the headlamps and reflectors for easy identification of legality. Fleetmen may secure full details of this important new line by writing the Electric Auto-Lite Co., Merchandising Division, Toledo, Ohio.

Klemm "Hill Master"

A governor designed to give full power on hills by means of a mechanical feature that renders the unit ineffectual when the vehicle is on an incline has been announced by the Klemm Automotive Products Co., 1718 North Damen Ave., Chicago, Ill. Known as the "Hill Master" the device has retained the simplicity of earlier model Klemm governors and provides a full range of speeds. Fleetmen interested in this development should write the manufacturer for further details.

Eberhard Key-Locking Handle

A lock handle of the key-locking type adapted for use on larger sizes of truck body doors has recently been brought out by the Eberhard Mfg. Co., division of the



Eastern Malleable Iron Co., Cleveland, Ohio, and has been designated No. 565,642. It is simple and sturdy in construction and fully streamlined for attractive appearance. The built-in Corbin lock has a 5-pin tumbler and $\frac{3}{8}$ -in. bolt. The handle is locked by simply pushing in the tumbler with the thumb.

MORE NEW PRODUCTS ON PAGE 78

NEWS

Nov. Truck Output Tops Oct. by 144%

While total truck production in the U. S. and Canada for the first eleven months of 1938 was 46 per cent under figures for the same period a year ago, production in November moved up sharply to a position only 19 per cent under November, 1937. The November total was 54,583 units, a 144 per cent increase over October's 22,390. The November 1937 figure was 67,508 units. Total for the 11 months was 464,139 units compared with 859,337 a year ago.

Total truck sales, as indicated by new truck registrations, for the first 10 months (latest available figures) amounted to 309,932 units compared with 559,592 in the same 1937 period. See table below.

Postpones Private Carrier Hearings

The Interstate Commerce Commission has granted the petition of the National Council of Private Truck Owners to postpone its inquiry and investigation to determine the need for establishing requirements for private carriers engaged in interstate commerce with respect to driver qualifications and maximum hours of service as well as safety and operation of vehicles. The new schedule of hearings before Examiner Snow follows:

Feb. 20, at the Office of the I.C.C., Washington, D.C.; Feb. 23, at the Hotel New Yorker, New York; Feb. 27, at Hotel Sherman, Chicago; March 2, at Hotel Nicollet, Minneapolis, Minn.; March 6, at Hotel Spokane, Spokane, Wash.; March 8, at Hotel Multnomah, Portland, Ore.; March 13, at offices of the California Railroad Commission, Los Angeles; March 17, at Hotel Fontenelle, Omaha, Neb.; March 20, at Hotel Peabody, Memphis, Tenn.

All hearings are scheduled for 10 a.m.

Carrier and Labor Spokesmen Present Views on Wage-Hour Jurisdiction Before the ICC

Tracing the legislative history of the motor carrier act and the fair labor standards law in an attempt to clarify the intent of Congress as to which law covers employees of motor carriers other than drivers, spokesmen for the trucking industry and representatives of organized labor spent most of the day in Washington, D. C. on Dec. 16 trying to untangle the jurisdictional puzzle in oral arguments before the Interstate Commerce Commission.

If the membership of the Commission has any definite aspirations in broadening its own powers, it was not indicated at the hearing.

On the contrary, a few questions directed at witnesses indicated at least some members of the Commission have the opposite point of view. At one point, Commissioner Eastman interrupted to ask why the wage-hour law does not specifically contain an exemption for all employees in the trucking industry if Congress intended it that way. He also raised the point that if the motor carrier act was to be broadened to increase its regulatory powers over trucking employees, as asked by many witnesses, the Commission might eventually place a further restriction on hours based on factors other than safety.

J. N. Beall, counsel for the American Trucking Associations, told the Commission that it was the intention of Congress when it passed the wage-hour law to exempt all employees in the country's transportation system. He cited the exemption covering railroad workers from the overtime provisions of the wage-hour law, and insisted that Congress, because of competitive situation in transportation, desired also to have a similar exemption for motor carrier employees. He estimated that operation under the wage-hour law would mean an increase

of from 10 to 20 per cent in costs to the industry since 50 per cent of the labor cost—that part going to employees other than drivers—would be subject to varying degrees to the penalty overtime rate prescribed in the law. Mr. Beall pointed out that the industry has no margin to absorb additional costs or to absorb unemployment from other industries.

He explained that the industry has a good deal of "mixed employment" and that the task imposed by the wage-hour law of keeping records would place on the members of the industry an insurmountable task. In addition to this, he reminded the Commission that the growing trend in the States to pass further restrictions on motor carriers as well as wage-hour legislation dovetailing with the federal statute makes ICC jurisdiction highly desirable for the sake of uniformity.

Similar testimony was given by E. S. Brashears, of the Household Goods Carriers Bureau; Reagan Sayers, of the Sproles Motor Freight Line; Harold S. Shertz, of the National Film Carriers; and Howell Ellis, of the Trans-American Freight Lines, Inc. Some witnesses took the view that when Congress passed the motor carrier act, it exhausted its powers over employees of the trucking industry and therefore no further power remained to be delegated to the Wage-Hour Administrator under the wage-hour law.

Robert M. Davitt, representing the New York State Motor Truck Association, took the position that to place all trucking employees under the jurisdiction of the ICC would amount to "an unreasonable departure" from the word "employee" as contained in the Act; that the policy section of the law fails to show any Congressional intent.

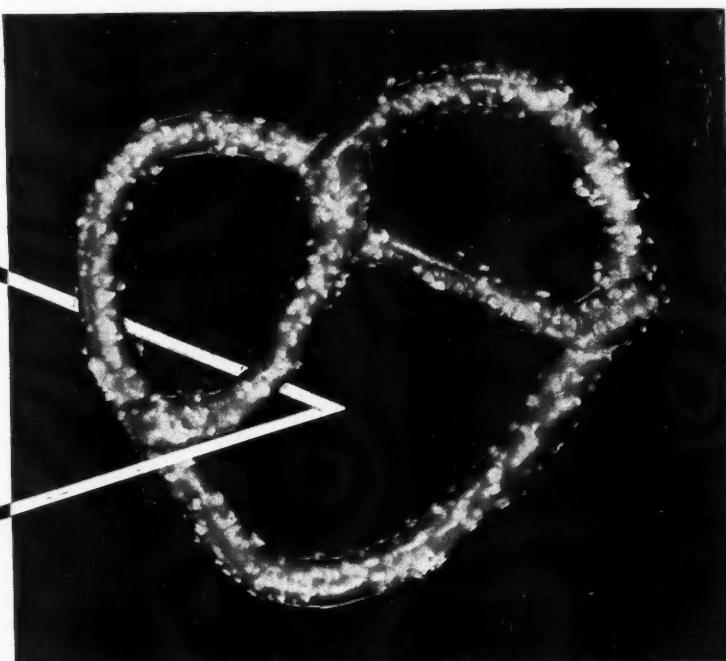
(TURN TO PAGE 44, PLEASE)

New Truck Registrations by Makes by Months

	Auto-car	Brock-way	Chevrolet	Diamond T	Dodge	Federal	Ford	G.M.C.	Hudson	Internat'l	Mack	Plymouth	Reo	Sterling	Stewart	Studebaker	White Indiana	Willys	Misc.	Total
January.....1938	129	64	10,137	335	3,070	118	9,114	1,746	99	4,501	254	668	216	16	27	158	288	176	227	31,343
January.....1937	130	102	13,975	828	3,873	199	16,230	2,749	278	6,098	382	208	344	22	89	167	583	125	300	48,482
February.....1938	95	57	8,991	338	2,622	109	7,687	1,401	81	3,763	217	562	182	9	19	144	316	138	238	26,968
February.....1937	112	115	7,777	580	4,904	205	16,100	2,987	355	5,138	363	692	305	25	101	215	538	57	292	40,850
March.....1938	110	86	12,233	380	3,666	136	9,898	1,965	77	5,256	352	769	283	17	31	161	394	174	303	36,291
March.....1937	179	140	16,924	815	6,337	236	20,386	4,122	539	5,689	476	1,104	484	23	147	465	647	76	299	59,068
April.....1938	119	127	11,719	393	3,575	136	9,287	1,917	78	4,810	366	757	251	26	43	184	368	175	341	34,672
April.....1937	228	184	21,974	863	3,935	258	22,241	4,671	482	6,710	586	1,143	378	43	118	706	809	107	346	65,782
May.....1938	193	159	10,659	360	3,171	93	8,918	1,810	68	4,281	382	662	287	25	45	221	364	168	340	32,206
May.....1937	197	183	20,146	816	5,893	294	19,884	4,416	499	7,071	579	1,447	411	27	120	701	783	77	440	63,974
June.....1938	235	116	9,912	332	3,055	95	8,427	1,730	65	4,045	317	681	213	21	38	158	308	196	288	30,232
June.....1937	197	139	16,703	644	6,048	223	17,414	4,035	554	6,681	538	1,634	435	33	92	643	668	82	374	57,135
July.....1938	129	99	11,226	382	3,238	117	9,425	1,875	67	4,782	347	660	264	34	38	116	337	182	362	33,746
July.....1937	281	152	17,809	764	6,508	225	18,934	4,237	579	7,539	622	1,715	480	34	107	622	667	99	312	61,696
August.....1938	88	111	11,268	397	3,286	125	9,471	1,909	61	5,361	370	593	231	23	28	209	289	158	253	34,231
August.....1937	174	134	19,477	665	6,906	161	16,526	4,529	539	7,700	430	1,664	337	15	93	556	520	105	341	60,872
September.....1938	129	123	6,577	318	2,285	135	8,296	1,513	28	5,236	353	391	252	19	30	167	303	143	212	26,570
September.....1937	184	94	16,703	649	6,521	131	16,232	3,602	412	6,639	413	1,440	268	32	76	355	508	75	317	54,711
October.....1938	135	135	3,828	419	1,564	100	4,966	1,306	26	5,104	512	306	285	19	45	162	317	140	220	19,589
October.....1937	195	129	10,745	486	5,142	166	10,277	3,238	267	6,522	426	984	283	20	79	285	660	55	297	40,246
Ten Months.....1938	1,364	1,077	98,021	3,757	29,970	1,171	86,725	17,172	660	47,816	3,493	6,170	2,503	209	344	1,695	3,304	1,668	2,813	309,932
Ten Months.....1937	1,880	1,372	164,852	7,346	56,708	2,122	176,981	39,175	4,580	66,818	4,856	12,278	3,806	287	1,032	4,763	6,444	858	3,434	559,592
% Change...10 Mos.	-27	-22	-40	-49	-47	-45	-51	-56	-86	-28	-28	-50	-34	-27	-67	-64	-49	+94	-18	-44

**LET'S
GET THIS
STRAIGHT**

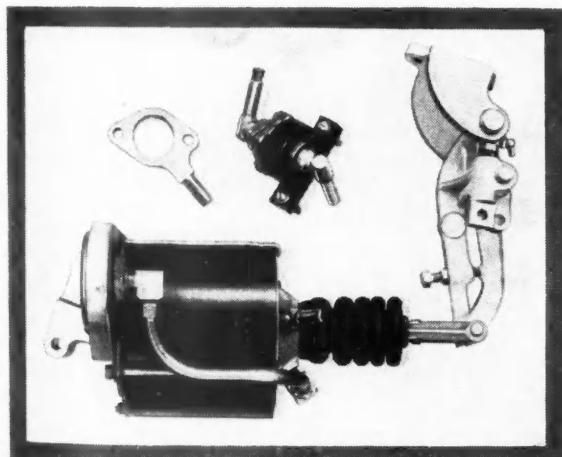
Genuine



Bendix B-K Vacuum Power Braking Systems

Offer . . .

- 1 Low initial installation cost**
- 2 Sufficient Controlled Power for heaviest loads**
- 3 Extremely low maintenance cost due to few moving parts**



IT costs money—not much, but an appreciable amount—to put power braking on a truck. Maybe you can cut the cost a dollar or so by specifying some cheaper type. But why? Here is a fact that comes to you net—no discount:

The only vacuum power braking system you can get, that will give you all the advantages for which power braking is bought, is Bendix B-K.

That's a large statement, but there's more than a dozen years of Power Braking experience and reams of evidence here at South Bend to prove it. Every one of the more than 2,000 Bendix trained service stations is equipped to show you and serve you.

**BENDIX PRODUCTS DIVISION
BENDIX AVIATION CORPORATION
SOUTH BEND INDIANA**

BENDIX
Controlled Vacuum
POWER BRAKING



NEWS

(CONTINUED FROM PAGE 42)

sional intent to include all employees under the ICC's jurisdiction; and that the Commission should only be empowered to regulate the hours of drivers employed by common and contract carriers.

Irving C. Fox, counsel for the National Retail Dry Goods Association, made a brief statement that in his opinion the motor carrier statute is so plain that it requires no argument from his group.

The advantages to employees of the trucking industry under the wage-hour law, as related by Joseph Padway, counsel for the American Federation of Labor, include (1) the overtime provision requiring time and one-half for all hours worked in excess of 44 per week; (2) employees receiving wages below the 25-cent minima would be raised—a power which the ICC does not have; and (3) industry committees to be named can recommend wages above the minimum.

Mr. Padway did not protest against a possible extension of ICC power to regulate working conditions for employees but insisted that Congress did intend to limit its powers as to classification of employees. After prescribing hours of service for employees whose work has a bearing on safety of operation, the Commission then can proceed with determining regulations for other employees based on economic questions, the AFL representative declared. He pointed out that even though it is determined that some employees are definitely covered by the ICC, they would be none the worse for the decision because "there is another tribunal where they can go for relief."

David Kaplan, representing the International Association of Machinists, an AFL affiliate, reminded the Commission that his request for maximum hours of service for mechanics in the interest of safety was denied in the Commission's hours of service order but that it was still his view that the work of such employees had a direct relation to safety. He agreed with Mr. Padway that his group would be more than content to be governed by the wage-hour law and charged that since the passage of the law, the carriers have acquired "a zeal for regulation by the ICC."

"Isn't it true," asked Commissioner Rogers, "that both sides have switched?"

Kaplan agreed that that was the case. Earlier in the hearing Commissioner Eastman had chided spokesmen for the industry that their viewpoint had changed since the advent of the wage-hour law but they were adamant, insisting that their current testimony was not inconsistent with that given when the hours of service proposal was pending.

1939 Dodge Prices

Dodge has announced Detroit delivered prices on its new 3-ton diesel chassis ranging from \$3,230 to \$3,450 with wheelbases of 152 in., 170 in., 180 in. and 205 in.

Price reductions on 1939 models of the regular Dodge line over corresponding 1938 models range from \$24 to \$40.



Charles T. Ruhf, recently named vice-president of Mack Trucks, Inc., and of Mack Mfg. Corp. He has been in charge of production at Mack's Allentown plant

Legislative Jottings

Indicative legislative trends include a note from Nevada which would indicate that the industry is facing agitation to equalize private carrier taxes with those charged for-hire trucks.

In Utah there is a proposed truck regulatory bill seeking to enforce safety requirements, including property damage and public liability insurance, which may require private trucks to obtain a permit from the Utah Public Utilities Commission.

Roads Bureau Rejects Highway Plan

A ban on the proposed network of super-highways to be constructed across the continent at a cost of billions of dollars will be recommended by the Bureau of Public Roads in its report to Congress which will be transmitted early in January.



Dave Buttles of Seattle Washington who has been western manager of Cummins Engine Co. is now national sales manager with headquarters in Indianapolis



Roy A. Fruehauf, formerly vice-president in charge of Western operations, has been named vice-president in charge of sales of the Fruehauf Trailer Co.



Fruehauf Trailer Co. has announced appointment of W. R. Myers (left) as plant manager and J. W. Votyka as chief engineer

(MORE NEWS ON PAGE 50)

LETTERS To the Editor

Re Reciprocal Buying

Cleveland, Ohio
December 14, 1938

Dear sir:

Under the attack on business by the present administration we manufacturers like to feel that we are martyrs. We know the attack is unjustified, in general. Government, however, has uncovered some abuses which are real enough to justify action in some cases.

One of these abuses which as yet has not been the subject of regulation but which will and perhaps should be, is that of reciprocal buying. This exploded theory is continued only because of its age, not because anyone in industry finds it a satisfactory method of placing business.

Industry, at great expense, sets up a purchasing department, an inspection department and an engineering department, to produce material of proper price and quality. After having done this they put in a reciprocal relations department who override the decisions of the buyer, the inspector and the engineer, and place business merely because of the suppliers' results in frequent strained industrial relations since no one can buy in a volume to satisfy the reciprocator. Not only that, but the distribution is never fair from the seller's point of view.

Reciprocal buying results in higher prices since the reciprocator cannot get the best price available. It results in lower quality since the reciprocator cannot insist on quality. It results in lack of standardization which enormously increase cost of upkeep.

I can see the joy with which a LaFollette, or a Roosevelt, or other muckrakers, will pounce on this industrial foible to show how incompetent is the management of American business. With that proof the New Deal can show it is necessary for government to guide, direct and protect industry, and thus only can it be kept solvent. As a matter of fact, who can show that government is not right in such conclusions? Result: One law, a million new jobs and a billion new taxes.

The worst of it is that in this case the government would have a perfectly clear case to prove its point. No one could take the untenable position that reciprocal buying is anything but asinine and wasteful. However, in the hands of governmental regulation for its elimination, a waste will be turned into regimentation from which industry perhaps can never recover.

Yours very truly,
J. F. LINCOLN

ATA Picks Chicago for Convention

Chicago has been picked as the location for the sixth annual convention of the American Trucking Associations, Inc., which will be held in October, 1939.

COMMERCIAL CAR JOURNAL
JANUARY, 1939

1 Comparing original equipment averages with replacement tire averages.

To illustrate this, we will take a hypothetical case where a fleet purchases thirty light delivery trucks, all equipped with tire A of one size. We will assume that the average monthly mileage of each truck is 3000 miles, and that no tires are removed for punctures or repairs. The trucks go into service on July 1st, and when the tires wear out they are replaced by tires of another maker, B, which we will also assume to be identical in quality with the A tires. The rear tires average 15,000 miles, the fronts 30,000 on these trucks, and by January 1st, all of the rear tires have been worn out, removed and replaced by B tires, but all of the original A tires are still running on the front wheels. When the fleet manager gets his report on January 1st on these thirty trucks, it will read as follows:

Make of Tire	Tires Off	Avg. Mileage
A	60	15,000

During the following six months, the front A tires are worn out, and on July 1st the fleet manager receives this report:

Make of Tire	Tires Off	Avg. Mileage
A	60	30,000
B	60	15,000

This report looks very bad for the B tire, all of which have been worn out on rear wheels, all the front B tires still being in service.

On the following January 1st, the report will show:

Make of Tire	Tires Off	Avg. Mileage
B	90	20,000

Now if we average all 120 of the A tires, we get an average of 22,500 miles, which will never be reached by tire B, even though it is identical in quality to A, because tire A had 50% on front and rear, while tire B will always supply 2/3 rear and 1/3 front tires, due to the difference in wear. Now if the purchasing agent used his average on A tires to compare with B, he would make a serious error amounting to $11\frac{1}{4}\%$ in A's favor, and perhaps the maker B would lose a customer undeservedly. The only way to avoid this error is to compare averages of A tires on front with B tires on front, and A tires on rear with B on rear, and then identical figures are reached and the correct conclusion may be drawn.

2 Averaging mileages of tires taken off over too limited a period.

To illustrate this, let us take a fleet of thirty trucks in contract excavating work. Tire A has been used on the fleet exclusively for a period of three years. Mileage summaries are made up every six months. In this work the mileage does not pile up very quickly, but over a three year period, tire A has averaged 20,000 miles. While many tires "die young" due to cuts and bruises, there were enough tires which avoided serious accidents to allow a satisfactory average to be produced. An energetic salesman now convinces the fleet manager that tire B is better than A, and let us assume that it is better. As A tires fail, B tires replace them and no new A tires are purchased. Six months after B tires go into the fleet, the mileage report shows:

Make of Tire	Tires Off	Avg. Mileage
A	20	20,000
B	5	8,000

While a few A tires have come out at low mileages due to injuries, there were enough old A tires coming off to bring up the average. Now none of the B tires had been in service long enough to wear out so all that failed did so due to injuries. Six months later, the report will show:

Make of Tire	Tires Off	Avg. Mileage
A	15	20,500
B	10	11,000

The older A tires coming off gradually increase the mileage average, and although the B tires show some improvement, the mileages on these tires escaping accident are not yet high enough to bring up the low mileage failures.

At about this time the purchasing agent of the fleet begins to be quite dubious about the salesman's statement, namely, that B tire is better than A, and in this case the only thing for him to do is to get a report on the number of B tires in service, the mileage, and the percentage of wear on each tire. By making necessary calculations and allowing for the general run of accidents, he can then estimate that *after a year or two more*, B tires will actually average higher than A, just as the salesman claimed. In this case, averaging mileages of the tires taken off led to erroneous conclusions, while averaging the mileage of tires still on with proper addition for service still remaining showed the accurate picture.

3 Variation due to wheel positions of tires.

Something has already been said under the first heading regarding wheel position when comparing mileages of replacement tires with original equipment tires. There is much more to be said about this, particularly when we compare mileage records in fleets where we have tractors, semi-trailers, and trailers, with a large percentage of the tires running as duals. In average overland service on a tractor semi-trailer unit there are ten tires, two on front, four on tractor wheels, and four on trailer wheels. We can estimate the relative mileages, based on rate of wear on each position as follows:

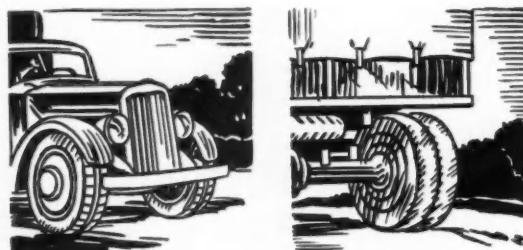
	Estimated Mileage	
Left Front	— 100%	60,000
Right "	— 95	57,000
Tractor Right Outside	— 35	21,000
" " Inside	— 50	30,000
" Left Outside	— 40	24,000
" " Inside	— 55	33,000
Trailer Right Outside	— 60	36,000
" " Inside	— 65	39,000
" Left Outside	— 65	39,000
" " Inside	— 70	42,000
		38,100 Avg.

This indicates that the average mileage of the first ten tires applied to the truck when worn out will be 38,100 miles. However, tires will not be applied to each

wheel position equally, and for every 100 tires put on the truck, they will be distributed as follows:

	No. Tires	Mileage	Total Mileage
RF	6	60,000	360,000
LF	6	57,000	342,000
Tractor RO	15	21,000	315,000
" RI	12	30,000	360,000
" LO	14	24,000	336,000
" LI	11	33,000	363,000
Trailer RO	10	36,000	360,000
" RI	9	39,000	351,000
" LO	9	39,000	351,000
" LI	8	42,000	336,000
	100	Avg. 34,740	

The average mileage of tires on this truck would, therefore, be 34,740 miles, or 8.8% less than the original set. Also, if an order for a few tires of a different make were given to a salesman for test purposes, a fair mileage comparison would not be obtained unless either the tires were applied in approximately the above ratio of wheel positions, or the mileages were compared position for position.



As a further illustration of this point, the following is an exact copy of a mileage report of a small bus operation covering a five month period:

Tire Size	No. Tires Removed	Avg. Mileage
6.50-20	32	29,544
8.25-18	23	47,205
8.25-20	9	63,500
8.25-22	28	21,589
9.00-22	10	32,460
	102	34,466 Avg.

These figures would seem to indicate that the 8.25-20 tire is much better than the others. However, all of these tires have the same tread compound, same tread design and are of the same make. Also, all of them were worn out, there being none removed due to injury or blowout. When we check the records for wheel positions of these tires, we find all 32 of the 6.50-20's were run on the rear. Of the 23—8.25-18's, 12 were run on the rear and 11 on front. All 9 of the 8.25-20's were run on front. Of the 28—8.25-22's, 20 were run on the rear and 8 on front, while of the 10—9.00-22's, 9 were run on the rear and 1 on front. By taking into consideration these various ratios of wheel positions, the reason for the wide variation in average mileages then becomes apparent and the uniform wearing quality of the various sizes is more nearly established.

4 Variation due to season of year during which tires were run.

While certain tread stocks and carcass constructions heat up less than others under identical conditions, nevertheless no tire manufacturer has as yet been able to develop a tire which will deliver the same mileage in hot summer weather as it does in cold winter weather.



Tread wear is greatly affected by climatic conditions. For example, a carefully controlled road test was made on five identical sets of tires, which were run during five different periods on the same car on the same Pennsylvania roads. In each case the set was removed when the right rear tire was worn out completely and the total mileages on the other three tires of the set were calculated from the tread weight losses. Mileage comparison was as follows:

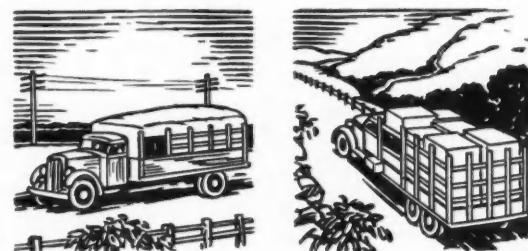
Duration of Test	Avg. Mean Temperature °F.	Average Mileage
Dec. 1-March 3	39.9	73,151
March 3-May 16	50.2	49,450
May 16-June 26	73.2	33,325
June 26-Aug. 3	77.5	27,616
Aug. 3-Sept. 8	73.5	33,775

Here, on identical tires we have a variation in actual average mileage of 45,535 miles due solely to a difference of 37.6°F. mean temperature. Certainly tread wear mileage comparisons will mean little or nothing unless the temperatures at the time during which the tires are run are carefully taken into account.

Similarly, when the cause of failure is "heat blow-outs," the temperature during the time of operation becomes the leading factor determining the mileage which the tire will deliver. Tires with a very low heat-overload endurance rating will give excellent mileages when the air temperatures are low enough to keep them cool, but in hot weather this weakness quickly makes itself evident by blow-out failures.

Average mileage data, therefore, which are compiled without regard for season or climate in which the tires were operated cannot be depended upon to furnish accurate comparisons between tires of various makes.

5 Variation due to location of operation, whether hilly or flat country.



Rolling over a straight, flat road wears the tread of a tire very slowly. Wear is caused mostly by the tire slipping or scruffing against the road, and this action is greatly increased on roads which have many turns and hills. Acceleration, braking, and rounding turns are accountable for a large percentage of tire tread wear. This was very well illustrated in a test which we made on one of our test cars operating in Florida during January and February, and then in Montgomery County, Penna., immediately after in March and April. In Florida, the car was operated continuously on the straight, flat roads leading from Fort Myers, while in Montgomery County, the hilly, curving roads in the vicinity of Conshohocken were used. Altho the average temperature in Florida in January and February was considerably higher than that in Pennsylvania in March and April, nevertheless the rate of wear on *identical* tire treads was *over double* as fast in Pennsylvania as it was in Florida.

Therefore, mileages on tires operated on different roads cannot be compared, even when all other factors are equal.

Tractor, semi-trailer units operating east from Philadelphia into the flat level roads of New Jersey may average 50,000 miles on 9.00-20 balloon tires while the same type of units with the same loads and the same tire equipment operating west of Philadelphia into the mountainous part of Pennsylvania will average less than 25,000.

6 Variation due to nature of operation, whether in stop-start service or in long distance work.



Mileages of tires used on vehicles which are in door-to-door or local delivery service cannot be compared with mileages of similar tires used in over-land or long distance work. Each time a vehicle is stopped, a certain amount of rubber is worn off the treads of tires, and when the number of stops during each mile of running becomes high, then the number of stops is just as important in evaluating tire wear as the number of miles run.

A few years ago we had a testing arrangement with a manufacturer of brake linings whereby we furnished tires for his brake test car in return for data relating to the wear of these tires. Whereas our own tire test car operates with very few stops, this brake test car operated all day just by accelerating to a definite speed, then stopping, and repeating this process so as to measure the comparative quality of various brake linings. A set of tires was applied to this car made identically with a set applied to our own test car. In each case the test was run during the same period, and in each case the tires were changed from front to rear, and vice versa, in order to equalize the wear. On our tire test car, the set was worn out at 26,320 miles, while on the brake test car the set was worn out at 7,500 miles. During these

7,500 miles, however, the brake test car had made a record of the following stops:

3,000 from 25 miles per hour
3,390 from 40 miles per hour
428 from 50 miles per hour

6,818 Total Stops

Therefore, the 6,818 stops had caused the difference in wear between the tire test car's 26,320 miles and the brake test car's 7,500 miles or 18,820 miles, so we calculate that each stop was equivalent to 2.7 miles of running!

7 Variation due to condition of vehicle with respect to wheel alignment, brake adjustment, etc.



While all well managed fleets keep their units checked for wheel alignment, slipped or bent axles, worn king pins, etc., nevertheless in spite of this, it will usually be found that some tires come out of service at mileages lower than should be expected due to mechanical trouble. The mileages of these abused tires should be eliminated from the averages otherwise inaccuracies in the comparative figures are bound to result. Being constantly on the watch for these low mileage tires will enable a fleet manager to locate mechanical troubles in the running gear of his vehicles before they develop into costly repair jobs.

Our motive in publishing this article on interpretation of tire mileage records is not entirely unselfish. We sell Lee tires on performance and quality, and believe that a better understanding of the complex factors entering into the evaluation of tire quality should enable our customers to more accurately judge the relative performance of Lee tires and competitive makes. On this basis, we are confident that Lee prestige and Lee sales will grow.

Copies of this article, "Weighing Truck Tire Quality," "Comparative Heat Generation in Truck Tire Treads and Cascases," "Growth of Pneumatic Tires, Comparing Rayon Cord with Cotton Cord," and our booklet, "Facts About LEE of Conshohocken Tires made with Lee Double-Life Cord, U. S. Pat. Re. 20316," will be gladly sent free on request. Lee Tire & Rubber Company, General Office, Conshohocken, Pa.

Copyright 1939, Lee Tire & Rubber Co.

NEWS

(CONTINUED FROM PAGE 44)

Court Clarifies Grandfather Clause

In the case of McDonald vs. Thompson the United States Supreme Court held recently that the "Grandfather Clause" of the Motor Carrier Act did not apply in cases of illegal or unauthorized operation. According to the clause, a carrier in bona fide operation on June 1, 1935, need require no further proof of public convenience and necessity.

But in this case the carrier had not secured state approval for his route and was operating contrary to state laws. The court held the operation was not "bona fide" as intended by the terms of the act and the mere mechanical operation of covering the route did not entitle him to I.C.C. approval.



Harvey C. Fruehauf, president of the trailer company which bears his name, has been elected a director of the National Association of Manufacturers

Penna. Dealer Law Unconstitutional

The Court of Common Pleas of Dauphin County (Pa.) has held the Pennsylvania law to establish the trade-in allowance of used automobiles unconstitutional on the basis that the legislature has no right to fix prices unless the business is affected with a public interest. The court held that the automobile business was not affected with a public interest.

APPOINTMENTS

William J. O'Neill, former vice-president of the Dodge Brothers Corp., has been named as the new president and general manager.

Studebaker has announced the appointments of William T. Clement to its headquarters sales staff at South Bend and of F. J. Kester to the sales training division. In addition the following district sales managers have been named: W. H. Stevens, Chicago; J. E. Sage, Kansas City; R. C. Lighthall, Pittsburgh, and J. M. Collins and S. C. Attebery, both in Atlanta.

E. A. Watson has been appointed Detroit district sales manager for the Fruehauf Trailer Co., succeeding Geo. W. Thomas. Otto F. Neumann continues as Detroit branch manager.

Walter B. Strong, formerly manager of the corporation's export division, has been named assistant general manager of the Worthington Pump and Machinery Corp.

Walter Jehu has been transferred from Timken Roller Bearing headquarters in Toronto to the district management at Boston.

James H. Gamberton has been appointed to the Acheson Industries technical staff headed by Raymond Szymanowitz.

W. J. Daily has been named sales manager of the Wolverine-Empire Refining Co. (Wolf's Head) with headquarters at Oil City, Pa.

Frank L. Foote, formerly of Hastings Mfg. Co., has joined Maremont Automotive Products, Inc., Chicago, as sales promotion manager.

N. Goldsmith, formerly with Simmons Mfg. Co., has been named sales manager of the Arrow Muffler Co., Chicago.

Lawrence M. Olson who has been named as national sales manager of the R. M. Hollingshead Corp. He comes from the company's regional headquarters in St. Paul



EAST & WEST

(CONTINUED FROM PAGE 23)

tions of cost that go to make up the overall cost of operation of motor vehicles. Drivers' wages are not included.

These data are based on various authorities and types of fleets as shown below the table reproduced at bottom of this page.

Drake Introduces "Humanics"

The next discussion session was

concerned with the problems of for-hire operators. Harley W. Drake was chairman of this session.

In opening the meeting he said, "There is a word which few of you connect with the trucking industry." The word is "humanics." It deals with the human element in highway transportation, or, to be more exact, with the psychology of the driver who is responsible for the safe and efficient operation of your equipment.

"In the trucking industry more than in any other business, it is imperative to know how your employees

are adjusted to certain problems present in every person's life. I refer particularly to the problems arising from fatigue and alcohol. What a man does when he is off duty will influence his actions during his hours of labor. If a man makes a habit of going on a bender, at the end of each run, he is a hazard to your business.

"Furthermore, a man may be just as dangerous if he is dog tired as if he is drunk. You have heard of many men being staggering drunk, and you have heard of men being staggering tired. Physiologically, the results of alcohol and fatigue poisons are very similar.

"This matter involves a double responsibility on the part of the intelligent fleet operator. First, he must be a sufficiently good judge of men to eliminate, without undue prying into the personal lives of his employes, those men who are psychologically unsuited to be drivers. Second, he must so adjust his schedule—particularly in long haul operations—to utilize the top of the fatigue curve of his men. After all, the human constitution is as much of

(TURN TO PAGE 52, PLEASE)

Distribution of Operating Cost in Per Cent of Total

	A	B	C	D	E	F	G	H	Aver.
Overhead.....	7.7	23.1	14.2	10.8	8.8	11.2	4.82	11.2	11.5
License and Insurance.....	5.6	5.6	14.8	9.3	8.7	11.0	12.90	5.6	9.2
Depreciation.....	21.0	12.2	19.7	20.1	19.4	24.0	17.77	28.3	20.3
Gasoline.....	19.3	14.5	15.3	32.5	38.5	28.2	33.70	22.0	25.5
Tires.....	9.4	4.1	10.7	4.4	55.2	4.3	7.97	7.5	6.7
Lubricants.....	2.4	.9	3.8	6.9	5.9	6.7	3.24	4.3	4.3
Servicing.....	19.5	10.2	9.7	6.2	3.0	5.8	1.85	8.1	8.0
Repairs.....	15.1	29.4	11.8	9.8	10.5	8.8	16.96	13.0	14.5
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

A. Large Oil Company's Survey (Average of Many Fleets)
 B. Large Public Utility Fleet
 C. Scattered Fleet of 400 Cars and Trucks
 D. Scattered Fleet of 300 Coupes
 E. Scattered Fleet of 450 Autos
 F. Fleet of 300-1/2-Ton Pickups
 G. Autocar Co. Report (adjusted)
 H. Composite Iowa Automobile

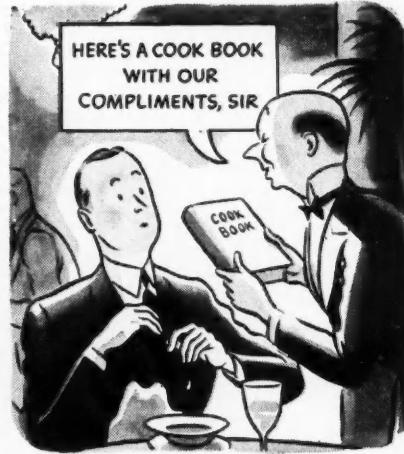
You'd be startled at this...



Or this...



Or this...



*Then why not
at this?*



IF THERE'S ONE PLACE where you *wouldn't* be startled by a flood of free services, it's a modern service station.

And the very fact that you *do* take services like these so much for granted shows how wide-spread they have become.

Here in America, the petroleum industry has carried out the idea of making the customer king to per-

haps a greater extent than has ever been known before. It has created, in the modern service station, an institution famous all over the world as typical of American hospitality and friendliness.

Benefits to America and Americans

Not only does this policy of surrounding you with service make motoring easier and pleasanter for you, but it

puts thousands of your fellow-Americans to work.

So the next time you drive into a service station and receive your free, up-to-the-minute map, your free battery check, free air, and friendly advice as to accommodations and points of interest, remember that you are experiencing another reason why you should be glad you live in modern America.

GULF OIL CORPORATION · GULF REFINING COMPANY · Gulf Building · Pittsburgh, Pa.

An advertisement appearing in daily newspapers to give the public a clearer understanding of the petroleum industry's contribution to better living in America.

COMMERCIAL CAR JOURNAL
JANUARY, 1939

When writing to advertisers please mention Commercial Car Journal

(CONTINUED FROM PAGE 50)
a constant factor as the operation of your truck motors."

Reducing Cost by Accounting

C. G. Anthony, general manager, Pacific Freight Lines, discussed "Reducing Costs." His emphasis was on the accounting and auditing departments of large general carriers. He was concerned primarily with the point that many truck operators fail to realize how concealed inefficiencies will be brought out by efficient accounting departments. Against the background of statistics, many practical problems will be seen in their true light—problems which will be missed by the operator whose vision is too close to the mechanical side of his operation.

"My best example," Mr. Anthony declared, "comes from the business in which I was engaged before I became a truck operator. Although similar situations have often occurred since I have been in the trucking business.

"At one time I ran a hotel. I made general averages for each department. During one week the expense for raw food jumped 11 per cent. Although I was 100 miles away from the hotel, and had been for over a month, I called my manager and told him to make an investigation in the kitchen. He discovered that the chef was stealing ham and bacon and selling it. I do not think that the manager would ever have discovered this, whereas the statistics which I saw, miles away, at once revealed the state of affairs.

"In the trucking business we have found it most advantageous to set up a general schedule of operating and maintenance costs for each type of equipment. We operate a fleet of several hundred trucks. Some of our trucks cover 10,000 miles a month and others 800 miles. For each type we set up a percentage of the total cost which is allowed for maintenance. On the very heavy duty tank trucks this is 13½ per cent; on the lighter trucks handling LCL cargo of an average weight of 350 lbs., the maintenance is 9½ per cent.

"Our record of each truck, covers when it was bought, mileage, the hours of labor spent on it, the gasoline and oil consumed, the cost of

repair parts, etc. After each run, the driver of every truck must fill out a report covering 32 specific points.

"In this way few are able to check the maintenance cost of the individual truck against the average cost of that class of truck. We are able to discover at once a piece of equipment which is not performing efficiently. Furthermore, we are usually able to discover whether this lack of efficiency is due to poor handling by the driver, poor design of the vehicle, or insufficient checkup by the shop."

Carrying on this discussion, H. J. Bishoff, Southern California Freight Lines, explained that each of his trucks has a sticker on the windshield which gives the number of the truck, the average number of miles per gallon that the truck should get, and the number of miles per gallon it actually got the previous month. The average fuel consumption for each class of truck is computed very carefully over many hundreds of thousands of miles of operation. It is constantly checked. Furthermore, liberal allowance is made so drivers will not work against too rigid a schedule. The windshield sticker causes the driver to take pride in the efficient operation of his equipment, and to become more careful when the fuel consumption of his truck rises above the average. As Mr. Bishoff put it:

"Golf without a score card would be a meaningless game. Unless the driver has something to check on, he is like a golf player who doesn't keep a score."

So far as possible, drivers are kept on the same truck. If, by the checkup mentioned above, their operation of a particular type of equipment is found to be inefficient, they are transferred to another type of equipment or to work on the loading docks.

Army Cuts Cost by Standardization

A paper by Lieut. Col. Edw. C. McGuire, Army General Staff, on "The Army Plan for Motor Vehicle Maintenance," was the next subject of discussion.

Col. McGuire explained that he believed that the results of the Army's vigorous campaign for motor vehicle efficiency might be of use to commercial trucking companies. The Army has been able to reduce the average mileage costs for 1½ ton

trucks in the Ninth Corps area to the astoundingly low figure of three cents per mile. These trucks operate out of Fort Douglas, Utah, and are forced to run over difficult highway conditions involving numerous grades and unpaved roads.

Two factors have been chiefly responsible for this reduction in operating costs. One is the relentless standardization of equipment, whereby the number of types of trucks is decreased whenever possible. As a logical corollary to this is the extensive use of unit replacement.

Maintenance Tips from a Bus Man

Leading off the next discussion was an address by T. C. Howe, superintendent of equipment, North Coast Transportation Co., Seattle, Wash., on "Bus Maintenance Problems and Practices."

Mr. Howe discussed experiences with various maintenance problems. They had discovered that the tendency to "over-tire" equipment was advantageous. Modern air brakes with "limiting" valves had proven practically trouble free. By cashing in on the experience of the field men of brake lining manufacturers, a high degree of efficiency had been secured.

An analysis of many axle failures had revealed two factors. First, that efficient lubrication was probably the most vital factor in securing trouble free axle performance. Second, that "an axle shaft should be handled in such way as to prevent dents or checks, as either may start a fracture."

To change all springs at 200,000 miles has been found to be highly advantageous. "The old springs are sold as junk to insure that they will not be used in the fleet again."

Referring to accessibility of equipment, Mr. Howe said: "In too many instances units requiring frequent attention were so placed or constructed that more time was required to get to the unit for servicing than the actual time spent in the repairs or adjustments."

How Mileage Determines Overhead

The session closed with the discussion of "Overhead" by S. B. Shaw, automotive engineer, Pacific Gas and Electric Co., San Francisco. This discussion, replete with charts and graphs, may be best summed up in

(TURN TO PAGE 54, PLEASE)

"LITTLE BUSINESS" GETS BIG NEWS! YOU CAN NOW BUY A *Mack Truck*

FOR
\$ 675⁰⁰

For standard chassis,
f. o. b. factory. Cab,
body and taxes extra.



LIIGHT-TRUCK operators, here's the best news ever! Mack presents a sensational new model—built specifically to do *your* kind of trucking job!

This new Mack Model ED is priced with the lowest—but it's

fully worthy of the greatest name in motor trucks. Yes, it's 100% Mack in value. Now your delivery and pick-up jobs can "cash in" on the stamina, dependability and long-run economy that have kept Mack the leader in the heavy-duty

field since the turn of the century.

You owe it to your business to find out about this astounding truck value. Write today for details.

MACK TRUCKS, INC.
New York, N. Y.

FOR ALL KINDS OF HAULING... IT'S A

Mack

(CONTINUED FROM PAGE 52)

Mr. Shaw's own words:

"The annual mileage per vehicle has an extremely important effect on the cost per mile, both for overhead items and for operating costs, the total cost per mile for low load factor operation ranging from three to four times as much as for high load factor operation.

"In the case of a 5000-mile-per-year operation, overhead may amount to from 46 per cent to 68 per cent of the total cost. For the 50,000-

mile-per-year operation, it is not as great a proportion, ranging from 21 per cent to 41 per cent of the total cost.

"The most important item of overhead is the vehicle investment cost. . . . For the 5000-mile-per-year truck, the lower investment has the advantage, the overhead charges amounting to \$.0638 per mile as compared to \$.0926 for the higher priced truck. On the other hand, for the 50,000-mile-per-year operation, the higher priced truck has the lower cost,

\$.00973 per mile as compared with \$.01964 per mile for the lower priced truck.

"These figures do not represent those of any particular make or model of vehicle. The examples taken are of light or medium sized trucks commonly used in many classes of operations."

Professor Explains Testing Equipment

The next discussion turned around an illustrated lecture by Prof. C. S. Vogt, Engineering Department, University of California. The title was, "What the University of California is doing." One of the points he made was that the advantage of fog lights is due to their position on the vehicle rather than the color. This conclusion was reached after a large number of highway tests were conducted, in which it was found that, although lights located low on the vehicle had a distinct advantage in fog, no additional advantage was gained by varying the color. This research, however, is not complete, and there is still a possibility that the amber glass will be shown to have a slightly greater fog penetration power.

A new testing device recently installed at the University will, it is believed, give accurate and enlightening information as to the most efficient cylinder temperature for self-igniting motors.

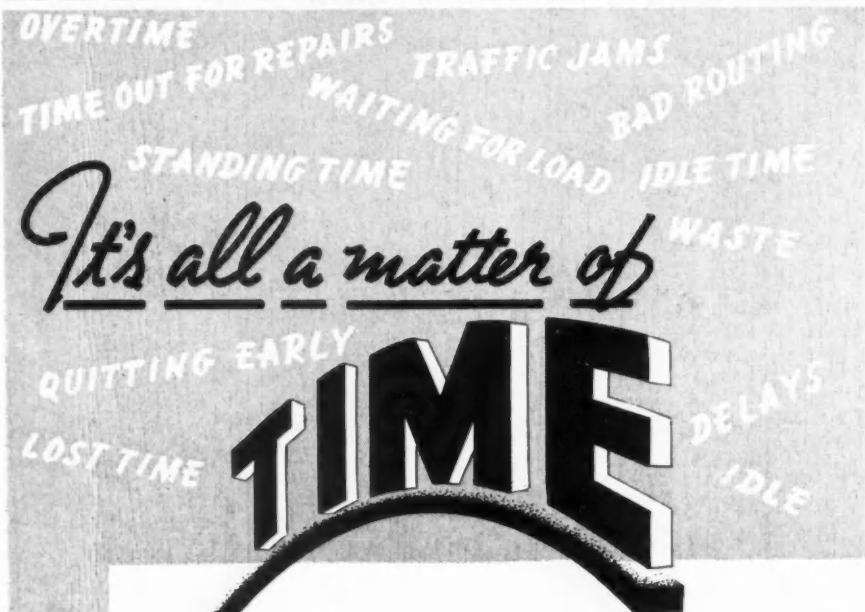
Mixed Fleet Problems

The final afternoon meeting was under the gavel of William H. Brown, Truck Master of the Southern California Edison Co., Los Angeles. This session was devoted primarily to the problems of mixed fleet operators. The lead off man was A. T. Colwell, vice-president Thompson Products Co., Cleveland, Ohio. His discussion was "Parts Manufacturer Can Reduce Costs." It was Mr. Colwell's belief that:

"About 10 per cent of all vehicle parts are not suited to the most efficient operation under certain conditions. It is the duty of the parts manufacturer to check on these local problems arising from unusual geographical or other operating conditions, and to supply such parts as will make the vehicle 100 per cent efficient under these conditions. An intelligent parts manufacturer will

(TURN TO PAGE 56, PLEASE)

HOW TO MANAGE TRUCKS



★ When did the truck leave—when did it arrive—how long did it stop—just when did it finish the first route—how much idle time—overtime—etc.

These are master questions, and when you get the answers "written" on a paper chart (see below) then it's easy to do a grand job of truck management.

It's really fun, and it happens to save a lot of money also—maybe \$500 per year *per truck!* Find out about it. Write for booklet: *Ten Ways of Getting More Work Out of Motor Trucks.* It's Free.

THE SERVICE RECORDER CO.
1422 Euclid Ave. • Cleveland, O.



The Servis Recorder

Tells Every Move Your Truck Makes

YOU CAN DEPEND ON CHAMPIONS

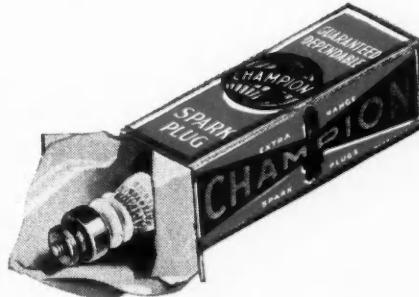
**FOR BETTER . . . MORE ECONOMICAL . . .
MORE DEPENDABLE ENGINE PERFORMANCE**

In operating a fleet of trucks, buses or automobiles successfully, extreme care must be taken to watch every maintenance and operating cost. Gasoline and oil consumption must be watched closely—expensive engine repairs must be guarded against—roadside delays must be avoided—in short, all units must be kept running at all times, under all conditions and with the utmost economy.

To accomplish such a trouble-free operation, most successful fleet operators

depend on Champion Spark Plugs. They have found after many years of experience that Champions, and only Champions, offer them the utmost in power, speed, dependability, and above all, economy.

If you have a problem that is troubling you, call in our factory engineer for consultation. Many perplexing problems have been solved in this manner. Remember—insist on Champions because you can depend on them to make your fleet operation more successful.



**THE SPARK PLUG
CHAMPIONS USE**

CHECK AND CLEAN SPARK PLUGS WHEN YOU CHANGE OIL

COMMERCIAL CAR JOURNAL
JANUARY, 1939

When writing to advertisers please mention Commercial Car Journal

(CONTINUED FROM PAGE 54)

keep constant check on the bugs which arise in specialized operations throughout the country, and be able to supply parts which will aid in untangling these bugs."

Depreciation Sets Off Discussion

Immediately after Mr. Colwell's paper, the session entered one of the most lively discussions of the entire meeting. Introduction of the controversial subject was in the form of a scheduled address delivered by R.

G. Booth, assistant transportation engineer, Los Angeles Department of Water and Power. The subject of this paper was "Depreciation."

"Probably no single factor of the various components of transportation costs," he pointed out, "offers the field for divergence of opinion as does that of depreciation. At the same time probably no other item of cost enjoys more varied methods of handling."

"For one to assert that any specified method is the only correct one

to use in all circumstances is as absurd as to state that a gray hackle fly is the only bait for trout."

"A few concerns can even cite cost studies to prove that two years is the economical time to turn in all their passenger cars, regardless of usage. I even know of a few individual owners who are sincere in their belief that their cars should be turned in each year and blithely go on their way rejoicing with the feeling that they are actually benefiting their pocketbooks. By the law of supply and demand one could easily see what would happen if this policy were pursued by everyone. It would reduce the trade-in allowance 60-90% with the resulting offset of increasing the depreciation cost for one year's operation to such an exaggerated figure that it would defeat its very purpose."

On the other hand his company had found that to completely overhaul a vehicle is not economical. It therefore became a problem of selecting equipment which could operate efficiently for a reasonably long period without the necessity of a general overhaul. Equipment, he believed, should last at least five years, and that the replacement after this period should be made at the point where the depreciation curve and the repair curve crossed.

However, this matter was further complicated by another factor—appearance. The consumer reaction to out-of-date equipment must be given an important place in any system of depreciation. In fact, this will often become the deciding factor in placing the exact point where a piece of equipment has depreciated practically to zero.

From here the discussion was picked up from the floor. Robert N. Reinhard, Golden State Dairies, stated that he believed that depreciation should be thought of in the nature of a fund, this fund to be kept for the purpose of replacing equipment when it has depreciated to zero.

He also believed it most important to consider depreciation not as an excuse for scrapping equipment, but as a method for getting the most possible efficient use out of each piece of equipment. He mentioned that, in certain cases, a milk truck may not depreciate to zero for 10 years.

(TURN TO PAGE 60, PLEASE)

BETTER CARBURETION
BETTER-GOVERNED
with
ZENITH
Combination
CARBURETOR and GOVERNOR

SENSATIONAL success from the start! Zenith's newest contribution to engine operating efficiency, the perfectly matched Carburetor and Governor, is already on the job, saving money in scores of fleets!

Better in every way than any separate Carburetor and Governor installation, because it overcomes all previous drawbacks.

This well engineered new Zenith combination is cheat-proof. It main-

tains fuel-flow and manifold distribution at full Zenith efficiency. Governing action is smooth—no surging, no annoying power-fading. Positive, uniform operation regardless of load, road and grade, with instant, unlagging acceleration.

One throttle and shaft only, operating on ball bearings!

Downdraft and updraft types, to fit most popular engines. Investigate now!

for Trucks, Buses,
Delivery Units and
Car Fleets

Consult your
Zenith Distributor or Dealer,
or write—

ZENITH CARBURETOR DIVISION
Bendix Aviation Corporation • Detroit, Michigan

When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL
JANUARY, 1939

Evidence

when you buy **YOUR** diesel!

miles of diesel-powered
truck performance

AND ECONOMICAL FOR FLEET OPERATION

miles of diesel-powered
truck performance in ONE FLEET

ANCE OF THE CUMMINS DIESEL

miles of diesel-powered truck perform-
ance in ONE long-haul fleet operation

ENGINE PURCHASED MAY, 1933)

miles of coast-to-coast diesel-
powered truck operation

LONG HAULS AND SHORT

CUMMINS

Dependable

DIESEL

PIONEER IN MODERN DIESEL DEVELOPMENT

These
Nationally-Known
Trucks are offered
with **CUMMINS**
dependable **DIESELS**
as original or
optional equipment:

AUTOCAR

AVAILABLE

CORBITT

DART

EUCLID

FAGEOL

FWD

HENDRICKSON

HUG

INTERNATIONAL

KENWORTH

LINN

MACK

MARMON-HERRINGTON

MORELAND

OSHKOSH

STERLING

WALTER

WHITE

(CONTINUED FROM PAGE 56)

Another point of view held by many operators was that, although discussions of depreciation were valuable, no system could be generally applied. Certain types of equipment were bought by certain operators for purposes which could be best served by using the equipment up to 10 years. In other cases equipment might be depreciated to zero in two years simply because of the type of work. Moreover, the factors in such individual cases were too complicated

to be treated by any rule-of-thumb method of establishing depreciation.

Another point brought out was the fact that during some periods many significant changes were made in truck design, whereas in other periods of equal length the changes were relatively minor. Therefore, so far as design and appearance went, the rate of depreciation was not constant.

P. D. Dunker presented the evening's speaker, Col. R. T. Eddy, of the Interstate Commerce Commission.

Col. Eddy's subject was, "Regulation of Highway Carriers."

EAST

A PAPER giving specific methods of increasing the efficiency of engines, a provocative suggestion for a different method of graduating tire sizes, an outline of the value and procedure of instrumentation in engine tune-up and a collection of shop hints from fleet shops provided material for discussion at the National Transportation Engineering Meeting which ran concurrently with the Truck and Auto Shows in New York. The meeting was jointly sponsored by the Transportation and Maintenance Activity and the Truck, Bus and Railcar Activity of the Society of Automotive Engineers.

The first paper was a discussion by F. S. Baster, chief engineer, White Motor Co., of design methods for getting more output from an engine. Mr. Baster made clear that the function of such design was not solely for the purpose of moving a larger payload faster but more particularly for the invariably associated reduction in specific fuel consumption.

Mr. Baster named intake manifold design, valve and actuating mechanism design especially as it involved valve timing and valve cooling, engine temperature control, control of thermal and mechanical distortion and ignition timing as prime factors in improved engine performance that lend themselves to careful consideration at this time.

Mr. Baster suggested that an intake manifold, conducting the gas the shortest possible route to the various cylinders and with the least possible exposed area with a single division zone located close to the carburetor, would improve manifolding since it would have a minimum of condensate to distribute and also any that is formed must go into the cylinder for which it is intended rather than having a choice as a result of velocity changes.

Hydraulic valve lifters were suggested by Mr. Baster as a means of attacking the old problem of achieving a valve timing that would provide a maximum of power and at the same time have sufficient seated interval

(TURN TO PAGE 62, PLEASE)

GOOD Body Fittings INDICATE TRUCK VALUE

B. Heinig, builder, Chicago.

Investigate THESE NEW "LONG RUN" ITEMS

CLAMPTITE Universal Lock for right-hand or left hand, single or double doors, and end gates; Key-locking handles for heavier doors; Stream-lined Hinges; Panel-Body Locks.

The real value of a modern truck can always be appraised from the quality of the body fittings provided by the builder. Cheap, skimpy door locks, hinges, etc., foretell almost continuous annoyance and cost from wear, misalignment and breakage.

But the incorporation of dependable Eberhard body hardware displays the builder's careful attention to every detail that makes for unhindered operation and low maintenance cost. If your new truck has Eberhard fittings, you can be pretty sure that it is a quality job all the way through.

Modern Eberhard body hardware meets every requirement of convenience, safety and durability, at moderate cost. For complete information and new reduced prices see your dealer, or write direct to

EBERHARD MANUFACTURING CO.
Division of Eastern Malleable Iron Co.
CLEVELAND, OHIO

EBERHARD AUTOMOTIVE HARDWARE
COMPLETE DESCRIPTIVE LITERATURE
ON REQUEST

E

Lighter by More Than A Ton...Costs No More



Truck body—204" long x 92" wide x 103" high. Built of DYN-EL by H. Kaiser & Co., Inc., Philadelphia, for Philadelphia Rapid Transit Company. Largest Public Utility truck in one single unit ever constructed. Built to carry 30-foot steel trolley poles. Contains mechanism for lifting poles into body shelves as well as a pole derrick for erecting them.

The Philadelphia Rapid Transit Company eliminated more than a ton of dead weight—cut gas, tire and license costs—by building their new large-capacity truck light and strong with Dyn-el, Alan Wood's new high tensile steel. A conventional body of this type weighs 7,200 pounds. Using Dyn-el for bulk heads, gussets, super-structure and base, the road weight of the new truck is 4,235 pounds . . . A saving of 2,965 pounds. Yet, the body of Dyn-el costs no more. Dyn-el is 50% stronger than ordinary sheet steel . . . 60 to 150% more resistant to corrosion than copper-bearing steel (4 to 6 times ordinary steel). The body is 9 inches longer than the same size unit built in wood and contains 47% more cubical material and tool carrying space.

The 48-page book, "A. W." Presents Dyn-el, gives full details of savings in weight and cost, possible with this new high-strength, flat-rolled steel. Diagrams, tables and charts cover a wide range of tests and properties. To executives, this book gives a quick picture of performance and costs. To engineers, it gives complete fabricating and design properties and costs. We will be pleased to send you a copy.



DYN-EL

ALAN WOOD STEEL COMPANY

MAIN OFFICE AND MILLS, CONSHOHOCKEN, PENNA. : : SINCE 1826 : : DISTRICT OFFICES AND REPRESENTATIVES—Philadelphia, New York, Boston, Detroit, Los Angeles, Seattle, San Francisco, Houston, Roanoke, Buffalo, Pittsburgh, Cleveland, Chicago, Cincinnati, New Orleans, St. Paul, St. Louis, Montreal, PRODUCTS INCLUDE—"A. W." Rolled Steel, Floor Plate, "Swede" Pig Iron : : Billets—Blooms and Slabs : : Sheared Steel Plates : : Hot Rolled Sheets and Strip : : Steel Products also furnished in Copper and Alloy analyses.

(CONTINUED FROM PAGE 60)
for the valve to prevent short valve life.

Mechanical distortion was treated as important by Mr. Baster, one of the points he made was that a thorough study of head hold-down bolt sizes and locations being necessary to prevent distortion. While this paper dealt with design and not with maintenance this phase of the discussion alone should serve to remind fleet operators of the importance of correct head bolt tightening

which can be accomplished only by using tension wrenches. In his remarks on ignition timing Mr. Baster stated, "Vacuum control is an essential and extreme care is required in its installation."

In discussing the paper Carl Voorhies, research engineer, Wilcox-Rich, outlined the part that hydraulic valve lifters play in improved valve timing and life (See Zero Tappet Clearance, Commercial Car Journal May, 1938). Lewis P. Kalb, vice-president, Continental Motors Corp. dwelt on the

judicious use of cast iron and careful placing of head anchorage bolts as a means of preventing mechanical distortion.

Horine Promotes Tire Discussion

In a paper titled, "Tire Sizes—Not More but Better," Merrill C. Horine, sales promotion manager, Mack Mfg. Co., argued for a complete re-shuffling of truck tire sizes. He based his argument on the fact that tire capacity increments by sizes are uneven, at some stages having almost no capacity differential and at others having an interval so great that it was impossible to properly equip certain capacity trucks properly. While the difference in the capacity of one size tire to the next did not sound like so much when expressed singly there was an embarrassing difference when it was multiplied by six which is the number of tires used on the popular size four-wheel trucks with dual rears.

Specifically Mr. Horine pointed out, "On prevailing 20-in. rims the 12,000-lb. chassis must either be under tired by 300 lb. with the 7.00/20 or overtired by 1200 lb. with the 7.50/20. The 14,000-lb. chassis must overload 7.50 tires by 800 lb. or underload the 8.25 tires by 1900 lb. The 16,000 lb. job is only 100 lb. over the capacity of the 8.25. The 18,000-lb. truck, despite its popularity, is a long way from either of the adjacent sizes. It is 2100 lb. too heavy for the 8.25 and the 9.00 is 1500 lb. too much. Similar discrepancies show up in cases of other sizes in all three rim groups."

Mr. Horine made the suggestion that perhaps the 22-in. rim group might be done away with, up to and including the 9.00-in. section.

The idea received a sound thumping in the discussion. Not one man rose in defense of the idea, whereas one discussor after another attacked it. A straw vote showed that the industry as represented in the meeting did not want tire sizes tampered with. However, another vote indicated that a majority of those present and qualified to vote would like tires to be marked with their capacity.

J. E. Hale, manager, Development Dept., Firestone Tire & Rubber Co., in discussing the paper stated that he did not believe that the industry

(TURN TO PAGE 64, PLEASE)

Midland Power Brakes

ADOPTED AS STANDARD EQUIPMENT BY AMERICA'S LARGEST MANUFACTURERS OF TRUCKS, TRACTORS AND TRAILERS



One of the world's largest manufacturers of trailers chooses MIDLAND POWER BRAKES as standard factory equipment



MIDLAND POWER BRAKE KITS

now available for

FORD • CHEVROLET • DODGE
GMC • AND INTERNATIONAL



MIDLAND
(CHRISTENSEN)
Power Brakes



When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL
JANUARY, 1938

INCREASE PAYLOAD PROFITS BY REDUCING YOUR BRAKING COSTS

with

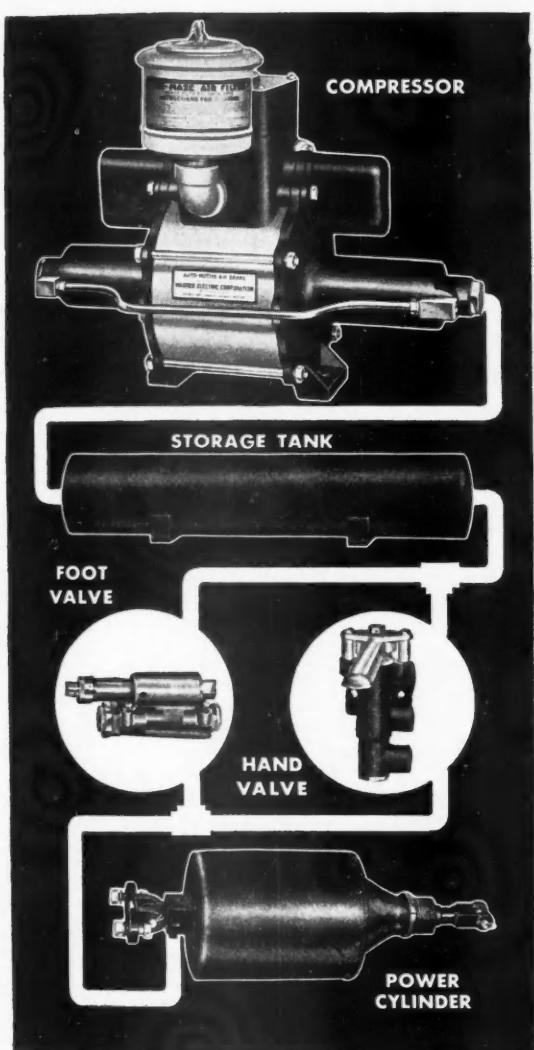
WAGNER Air Brakes

You truck, trailer, tractor and bus operators are in business to make money. The profit you make is whatever portion of your payload dollar is left after all operating expenses are paid.

Labor, gasoline, oil and depreciation are set charges that cannot be reduced. But, there are operating costs that can be reduced, and outstanding among these is braking cost.

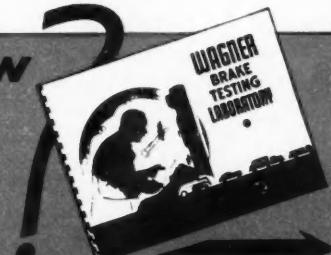
Thousands of dollars are spent needlessly each year for brake repairs and maintenance. A goodly portion of this waste can be eliminated by equipping your rolling stock with Wagner Air Brakes.

They are a product of Wagner's proven hydraulic brake engineering ability, and have been developed by engineers who have been in the industry since the inception of hydraulic brakes. This knowledge, plus unlimited manufacturing facilities, is your assurance that Wagner Air Brakes are the ideal brakes for all hydraulic brake equipped trucks, tractors, trailers and buses, as well as those equipped with mechanical brakes. The coupon below is for your convenience. It will bring you complete information.



Do you know?

That the Wagner Brake Testing Laboratory is one of the finest and most complete in the entire country? A booklet explaining and illustrating the various rigid tests to which Wagner Brake Materials are subjected, is yours for the asking. Check coupon at right and you will understand why Wagner Air Brakes always give more perfect performance under all conditions.



AUTOMOTIVE PARTS DIVISION

CCJ K39-1A

Wagner Electric Corporation
6400 Plymouth Avenue, Saint Louis, U.S.A.

I am interested in receiving full information on the Wagner safety equipment checked below:

- Wagner Air Brakes
- Brake Testing Laboratory Book

NAME.....

COMPANY.....

ADDRESS.....

CITY..... STATE.....

(CONTINUED FROM PAGE 62)

wanted the subject of tire sizes opened up. He stated that tire manufacturers had no more to do with tire sizes than did truck manufacturers and operators. Tire manufacturers are willing to make any tire size that a manufacturer needs and new requirements would force changes on any planned program. He also stated that the period of readjustment, if sizes were to be revised, would be very painfully long and complicated.

From B. J. Lemon, U. S. Rubber Products Inc., came the thought that there were plenty of physical and mechanical limitations present to make necessary all of the different sizes now in use.

Adolph Gelpke, chief engineer, Autocar Co., suggested that when the capacity differentials were considered by percentage they were not so great and that he disagreed with Mr. Horine's statement that tires larger than 9.75 on 20 in. rims could be discarded.

Boost Instruments for Field Use

W. A. Roberts, Rappuhn Corp., in a paper prepared jointly with U. H. Yenni, Joseph Weidenhoff, Inc. on instrumentation in electrical equipment maintenance read a veritable encyclopedia on diagnosis of engine troubles and tune-up. He outlined a lengthy initial check to be performed with an imposing array of equipment and then a detailed test. He stressed the need for adoption of certain standard instruments for determining the condition of various factors of the engine. He also urged a standardization of methods in the use of instruments and a program of education both in the use of instruments and the method of procedure.

Capt. O. A. Axelson, Automotive Engineer, Columbia Gas & Electric Corp., in discussing the paper dwelt upon the necessity of research to determine when to tune-up and how to know when fuel consumption is right.

Robert Krieger, Public Service Co. N. J., said that he was in general agreement with a thorough diagnosis and tune-up procedure where the fleet was centralized but in the outlying shops that have only a small number of vehicles, instruments were not used because they cost more than could be saved by their use.

Robert M. Critchfield, chief engineer, Delco Remy, stated that getting good instruments was as important as learning to use them correctly. As an example he pointed out that at one time 50 per cent of the parts returned from the field were okay, but the adoption of proper equipment reduced this number to 15 per cent.

Henry Jennings, technical editor, Commercial Car Journal read a paper composed largely of shop hints. The ideas presented were gathered from fleet operators and their purpose was to contribute to economical fleet operation.

Comments of Capt. Axelson on this paper indicated that he had a great deal of faith in ideas that originate in the shop but that he thought it was sometimes necessary to polish up the ideas because while the shop men had the correct idea, the finished product was not entirely right.

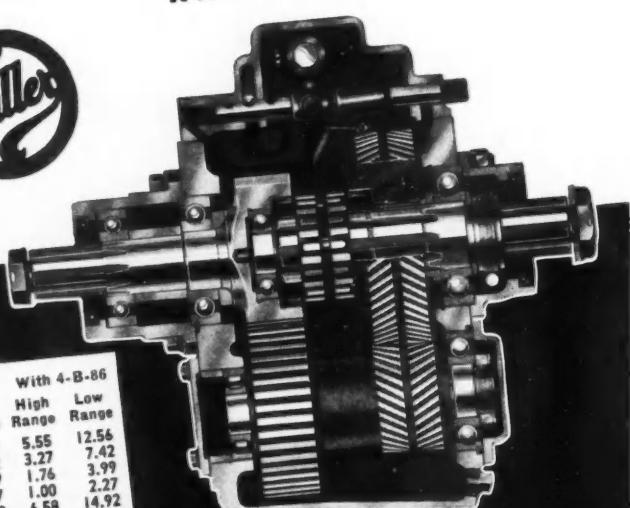
F. K. Glynn, American Tel. and Tel. Co., said that he thought all ideas that come out of the shop should be looked over very carefully by some one who is safety conscious.

FULLER Model 2A86 Two-Speed Auxiliary Transmission



This heavy duty two-speed auxiliary transmission enables trucks to move big loads when the going is bad, and provides intermediate ratios for more flexibility on long grades. Designed to operate in combination with the FULLER 4A86 series transmissions and engines of 600 to 900 cu. in., the 2.27 reduction provides an extra range of lower gear ratios which decrease motor strain or excessive motor speed. Herringbone reduction gears are used, for strength and quiet operation. Toothed type engagement clutch assures short, quick, easy gear shift.

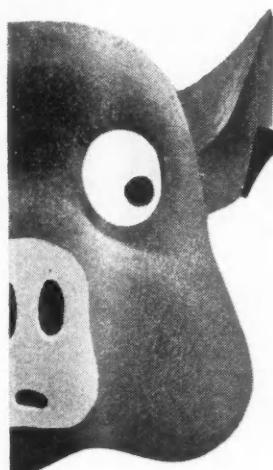
**FULLER MFG. CO.
KALAMAZOO . . . MICH.**



Gear Ratios	With 4-A-86		With 4-B-86	
	High Range	Low Range	High Range	Low Range
First . . .	6.54	14.83	5.55	12.56
Second . . .	3.27	7.42	3.27	7.42
Third . . .	1.76	3.99	1.76	3.99
Fourth . . .	1.00	2.27	1.00	2.27
Reverse . . .	7.24	16.42	6.59	14.92

When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL
JANUARY, 1939



The sow's ear AND THE V·8 ENGINE

THE proverb says that you can't make a silk purse from a sow's ear. The quality just isn't there. It's the same with trucks. No truck can turn in a record for reliable, economical service without *basic quality*.

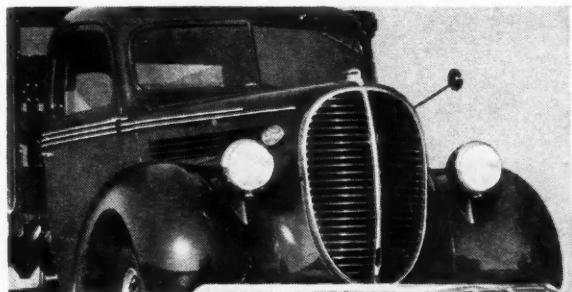
We don't point to the Ford V-type 8-cylinder engine as the chief advantage of Ford Trucks. It's only a symbol of the extra value that a Ford gives you. The full torque-tube drive, the 47 different kinds of steel, the extremely fine tolerances to which vital parts are held—any of these points of quality or a dozen others will convince you that Ford Truck construction is *quality construction*.

The Ford Motor Company is in the truck manufacturing business—and has been for twenty-one years. A point-by-point examination of a 1939 Ford V-8 Truck or Commercial Car will convince you that there is no unit in the world of comparable size and price that is better designed and better built to serve you.

CHECK YOUR TRUCK AGAINST THESE QUALITY FORD FEATURES!

- ★ **V-8 ENGINES—95, 85, 60 HP.**—Smooth, dependable low-cost power. Quality materials and precision workmanship for efficient operation and long life.
- ★ **SEMI-CENTRIFUGAL CLUTCHES**—Non-tiring pedal action. Centrifugal force provides tremendous power-transmitting capacity. Up-keep costs kept at a minimum.
- ★ **STURDY, TROUBLE-FREE TRANSMISSIONS**—Large roller and ball bearings for all forward speeds reduce friction, save power. Oil-hardened chromium-steel gears for long service.
- ★ **FULL TORQUE-TUBE DRIVE**—Springs relieved of driving and braking stresses provide better cushioning of truck and its load. Shackle-bolt wear reduced, spring life prolonged.
- ★ **RUGGED REAR AXLES**—Driving pinion is straddle-mounted to maintain gear-tooth alignment. All truck axles are full-floating, with weight carried on axle housing—none on axle shafts. These features increase dependability and long service, reduce up-keep expense.
- ★ **BIG, POWERFUL HYDRAULIC BRAKES**—Equalized braking action for straight stops. Big brake-drum diameters and large lining areas for long brake life and low-cost maintenance.

In every detail, the quality of all Ford bodies matches the high quality of Ford chassis. Their exceptional durability means long service with low up-keep cost.



FORD V·8 TRUCKS and Commercial Cars

FORD MOTOR COMPANY NOW OFFERS FORD V-8 CARS AND TRUCKS, MERCURY, LINCOLN-ZEPHYR AND LINCOLN MOTOR CARS
COMMERCIAL CAR JOURNAL JANUARY, 1939

When writing to advertisers please mention Commercial Car Journal



SHO-TURN Right and Left Turn DIRECTION SIGNAL

SIMPLE in construction and operation—so that neither signals nor driver can go wrong. Once installed they continue on the job without further care. Special light transmission lens glows evenly in daytime as well as dark. Semi-automatic switch . . . instantaneous action . . . turns off as soon as turn is completed.

**For Fair
or Adverse
Weather . . .
visible in
fog, rain,
snow, sleet,
dust.**



MODEL No. 565-A

Six types
in many
combinations.

TESTED
APPROVED

Members by Invitation—Rice Leaders of the World Association

The **K-D Lamp Co.**
CINCINNATI, O.

RECORDERS

(CONTINUED FROM PAGE 27)

routes and he has speedometer mileage records on these routes. He can closely estimate the total of "running time" that normally should be required by a driver to cover his own daily route, with due regard to safe driving.

Standing Time Is Vulnerable

This leaves, excepting for occasional extra loading time, only one other variable—"standing time"—with which we can work to reduce the total daily service time of a particular truck. In our own type of operation this "standing time" becomes very important. This is because most of our drivers normally make 20 to 30 delivery stops per day. Hence, a driver's "average minutes per stop" becomes our best yard-stick for measuring his working efficiency. And a comparison of such "averages" made by our different drivers, month by month and year by year, also affords a kind of measurement

of the managerial efficiency of our dispatching department.

Our method of tabulating the "average minutes per stop" for a driver is quite simple. First, we get from his daily time chart his total minutes of "running time"; and his total of "standing time". Then we check his docket for the day, to see how many scheduled stops he had. We divide his total minutes of standing time by this number, which gives us his "average minutes per stop."

In evaluating this result for any particular day, we must take into consideration the total volume of the driver's deliveries. For instance, our Tuesday deliveries are always comparatively heavy, following Sunday and Monday inventory checkups and orders; and the Tuesday following the first of the month is especially large. However, these peaks will average out about the same for the different months.

It is quite remarkable how nearly uniform will be the "average minutes per stop" for the entire month, when we compare one month with another, for a good driver whom we can assume to have become "stabilized" in

his day-by-day driving and delivery habits.

As an example from our recent records, Driver A., with a semi-trailer and helper, shows the following time per stop per month:

March—12.9 minutes average, for 453 stops.

April—12.2 minutes average, for 454 stops.

May—11.5 minutes average, for 444 stops.

June—12.4 minutes, average for 551 stops.

As another example, Driver B., likewise with a semi-trailer and helper, had the following record:

March—11.9 minutes average, with 492 stops.

April—9.9 minutes average, with 449 stops.

May—11.4 minutes average, with 446 stops.

June—11 minutes average, with 432 stops.

In contrast, here is the time record for a 2½-ton straight-back truck, where the driver had no assistant:

March—18.8 minutes average, with 155 stops.

(TURN TO PAGE 68, PLEASE)

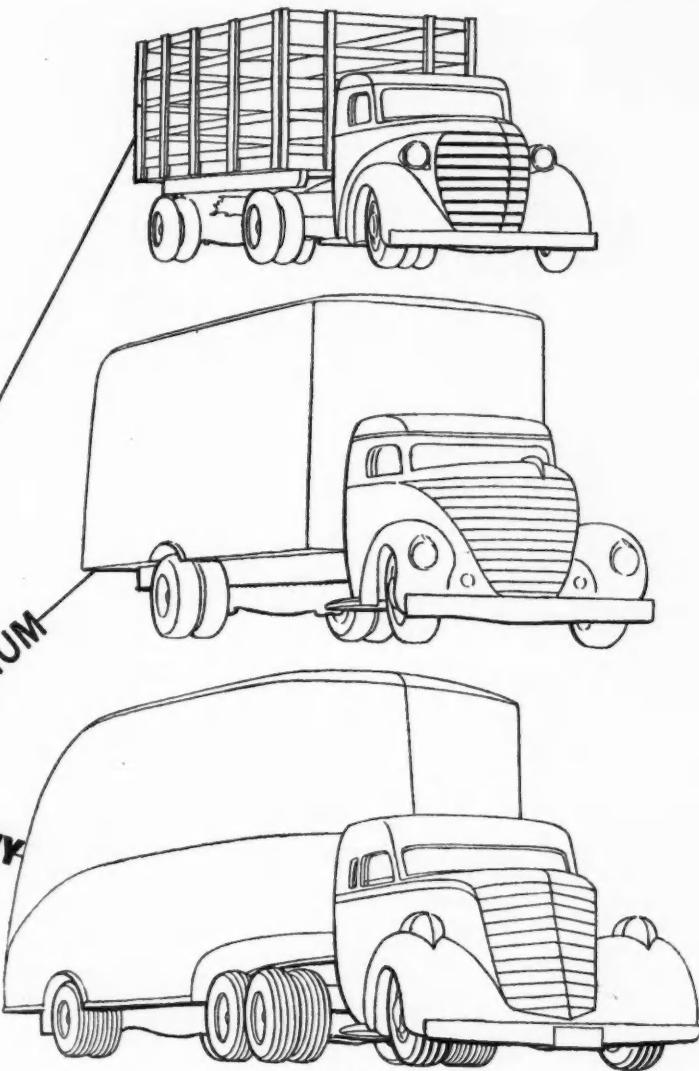
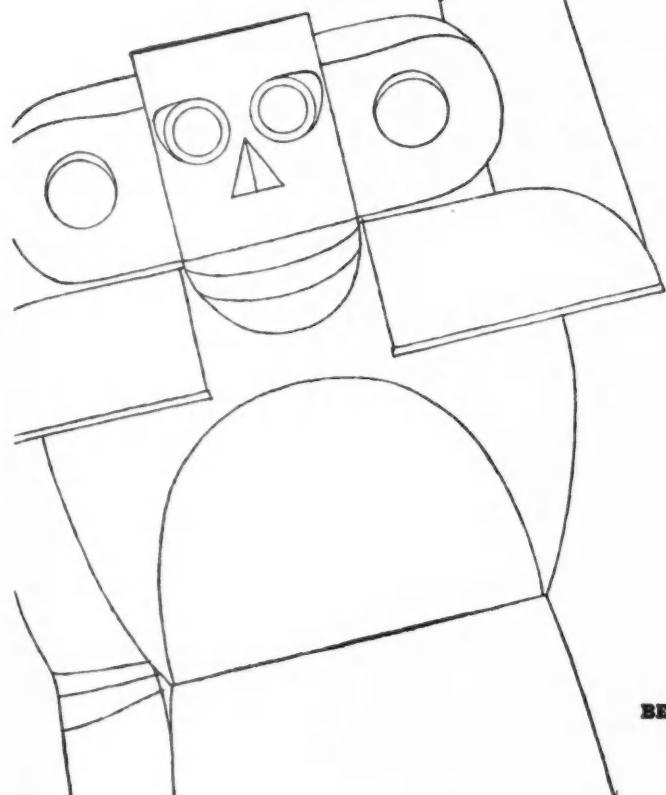
FOR LOW COST MAINTENANCE



Whatever your requirements, if your problem is to transmit power at an angle, our field and factory experience of more than 30 years is at your command. Our Engineering Department will gladly submit quotations covering your requirements.

**BLOOD BROTHERS
MACHINE COMPANY**
DIVISION OF STANDARD STEEL SPRING COMPANY
ALLEGAN • • MICHIGAN

Genuine **WESTINGHOUSE AIR CONTROL**



Maximum stopping power with lowest pedal pressure, perfect equalization, instantly dependable application and release, unchallenged flexibility and reserve force . . . that's genuine Westinghouse Air Control • And it costs you less than ordinary brakes • Today, no commercial operator can afford anything less than the positive performance of the world's finest control • Specify "Westinghouse Air" and be certain you get the genuine • Each component part of the Westinghouse System is scientifically designed to contribute to your safety and economy • Be sure each item of your system carries the trade mark of the genuine . . . it's your guarantee of safety, dependability, and satisfaction.

BENDIX-WESTINGHOUSE AUTOMOTIVE AIR BRAKE CO.
PITTSBURGH, PENNSYLVANIA

(CONTINUED FROM PAGE 66)

April—18.5 minutes average, with 198 stops.

May—18.6 minutes average, with 226 stops.

June—16 minutes average, with 245 stops.

It will be seen that such tabulations afford valuable data for cost studies. There is opportunity to compare one driver with another, where their operations are rather similar. We have standards for judging the efficiency of new drivers;

and also for testing the working regularity of a driver month by month and year by year. There is data also to help in determining whether we could lessen the delivery costs for a particular route by putting on a trailer with two men, versus a straight-back truck with one man. Based in part on such tabulations, we have gradually been adding semi-trailer jobs.

Accidents Reduced

For a number of years we have

given close attention to accident hazards; and we feel that our use of time-recording devices has greatly aided us in this program. We emphasize to our drivers, through our time records, that the way for them to save time in their delivery schedules is through the reduction of their "average minutes per stop," and not by "burning the road". We have mechanical governors on all our trucks, and our first road rule is "drive with safety". Thus, the safety factor has always been given prime consideration in putting extra helpers on our semi-outfits.

The chief safety advantage from an extra man is added precautions when the truck is being backed, especially in cramped quarters and under crowded traffic conditions. The success of our safety program is proved by the fact that during the past four successive years the Walgreen Company has won the highest safety award in its group in the Interfleet Drivers Safety Contest of the Greater Chicago Safety Council, in which nearly 200 different local fleets representing more than 11,000 vehicles were entered last year.

HOOF BRAKE EYES MAKE HYDRAULIC BRAKES SAFE!

No Motor Vehicle with Hydraulic Brakes is safe unless it is protected against line and cup failure with Hoof Brake Eyes!

Get the complete story on the importance of this development to you. Write!

REGARDLESS OF FAILURE
in either front or rear
brake system—

HOOF BRAKE EYES ASSURE PROTECTION with two Balanced Brakes!

Priced so Low that No Fleet Operator Can Afford to be Without This Extra Measure of Safety!

If your jobber cannot supply you, write direct to

HOOF PRODUCTS COMPANY, Makers of Famous Hoof Cantilever Governors, Dept. BEC, 6543 So. Laramie Ave., Chicago, Ill.

HOOF
For SAFER Hydraulic Brakes
PATENT NO. 2,105,748

BRAKE EYES

When writing to advertisers please mention Commercial Car Journal

Maintenance Lowered

Our fleet safety program of course is an important part of our total program for fleet maintenance, described in a previous article in *Commercial Car Journal* (October, 1935—"An Original Cost System"). We stated that the use of our cost system, supplemented by daily service recordings and other records and methods, had helped us to make savings (up to 1935) of approximately 20 per cent in our fleet maintenance expense; and this percentage of maintenance savings has continued steadily since 1935. This has included savings in gasoline, oil, tires, brakes, starters, clutches, springs; and also general savings through the more steady operation of our equipment, which has meant more complete utilization of the time of our drivers and trucks.

The use of time recorders has enabled us to keep such a careful check on our drivers that they do not develop the habit of making prolonged needless stops and then speeding up to get back the time thus wasted. Thus they drive more steadily, with a consequent decrease in road hazards.

(TURN TO PAGE 70, PLEASE)

Executives Turn To TRAILERS



EXECUTIVES today are free from prejudice and pre-conceived ideas. They're "Trailer-minded" because they are "cost-minded." Struggling with all kinds of unusual expenses, they're turning to Fruehauf Trailers—and these useful business tools are trimming costs so that earnings can come back and UP.

EXCLUSIVE FEATURES

These Fruehauf cost-cutting advantages include the new "F" body, permitting bigger payload with no increase in gross weight, and designed so that it is easy to service. New heavy-duty, mountain-type brakes with quick-action application, designed especially for super-safe operation. Improved main and auxiliary springs for greater safety.

Remember, too, that Fruehaufs are easy to service. First, because they're designed right, and, second, because Fruehauf has the largest branch and distributor organization in the Trailer industry. Quick, efficient service is assured!

If you're looking for bigger profits through bigger payloads, look into Fruehauf Trailers. Complete details, including price and specifications, available without obligation.

*World's Oldest and Largest Manufacturers
of Truck-Trailers*
FRUEHAUF TRAILER CO.
10912 Harper Ave. - Detroit, Mich.
Sales and Service In Principal Cities

HERE ARE THE ADVANTAGES OF THE FRUEHAUF DUMP TRAILER

POWER FIFTH WHEEL—a patented mechanism which transmits power from the tractor to the hoist mechanism, permitting complete interchangeability of units.

HIGH TENSILE STEEL FRAME—providing more strength with less weight, thereby increasing the payload without increasing the gross weight.

DUMP TRAILER STABILIZER—an other patented Fruehauf feature designed to make dumping safe by distributing the load.



FRUEHAUF TRAILERS

*"Engineered
Transportation"*
REG. U. S. PAT. OFF.

MORE FRUEHAUF TRAILERS ON THE ROAD THAN ANY OTHER MAKE



"Reckon I put tew much volatility in thet batch!"

THERE'S nothing as dramatic as an exploding moonshine still to tell you that the gasoline you use in your trucks or buses is too volatile or not volatile enough. There is plenty of practical evidence in the way those trucks and buses run.

When gasoline does not have enough volatile fractions, or light ends, it shows up in slow starting and repeated choking, resulting in crank-case oil dilution and poor mileage. The superabundance of heavy ends in such gasoline also contributes to

fuming and obnoxious exhaust odors.

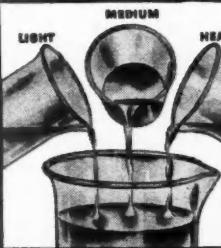
When gasoline has too many highly volatile fractions, it causes vapor lock and poor mileage, the latter due to excessive evaporation from gas tank and carburetor vents.

How can you be sure of avoiding both these extremes? By buying gasoline with balanced volatility—enough light ends or fractions for quick, easy starting, and enough medium and heavy ends to supply the power for sustained economical operation. The best way to be sure of

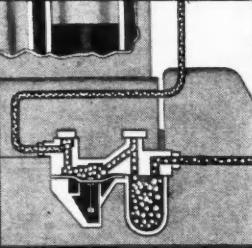
getting this kind of gasoline is to buy from a reputable oil refiner or marketer. When you do, you'll usually find other advantages in the same gasoline—correct vapor pressure, low gum content and high anti-knock value.

If you have any questions on bus or truck fuels and their specifications or characteristics, write or get in touch with the Ethyl Gasoline Corporation, Chrysler Building, New York, N. Y., manufacturers of anti-knock fluids used by oil companies to improve gasolines.

**4 RULES
FOR GOOD
GASOLINE**



VOLATILITY should be balanced, for full power and best economy.



VAPOR PRESSURE should be adjusted to meet operating conditions.



GUM CONTENT should not exceed $\frac{1}{4}$ of a gram (4 small drops) per gallon.



ANTI-KNOCK VALUE should be high, of at least 68 octane number.

THE BETTER THE GASOLINE THE BETTER THE PERFORMANCE

(CONTINUED FROM PAGE 70)
models whose engines are still giving good service after 200,000 to 300,000 miles. This rule, enforced by carefully watching our driver's daily time charts, undoubtedly is saving us considerable gasoline each year.

Better Time Distribution

Our use of time recorders is enabling us to distribute the delivery service time of our trucks much more accurately than otherwise would be possible. We rely in part for this

distribution on the daily report cards handed in by our drivers. These report forms include the truck number, date, driver, helper, odometer readings out and in, gas consumption, oil consumption; and "from" and "to" time notations which designate by code which of our 12 different departments were served.

The knowledge that the "man in the cab" also is checking on them, has helped to train our drivers to a high degree of accuracy in this distribution of the time of our trucks.

These daily reports enable us to compile for each of our trucks a weekly report which tabulates miles of travel, gas, oil, classification of delivery time, and total time.

For each truck there is also compiled, directly from our daily time charts, a monthly time tabulation. This shows for each day of the month, the totals of "loading time" and "running time". This latter is extended in minutes, and when divided by the totals of authorized stops, we get the "average minutes per stop" for the truck for each day and the entire month.

All such individual truck averages then are condensed into one simple tabulation which has become a valuable monthly report to show the comparable habits of all our trucks and drivers. The first perpendicular column of this sheet lists the various trucks by number; and across the page horizontally are increasing numerals from 3 up to 20, to designated "average minutes per stop". Thus, opposite the number of each truck is drawn a line which graphically indicates the driver's efficiency for the month in "average minutes per stop."

A study of our back files indicates that about eight years ago we considered 18 to 20 minutes a fairly efficient average of "minutes per stop" for our trucks in regular store deliveries; but today we are keeping our general average down to about 15 minutes. This roughly indicates that we have been able, during this period of eight years and with the aid of our time charts, to increase the efficiency of our deliveries by at least 15 to 20 per cent.

ICC Accident Report

A report covering all accidents reported by common and contract carriers has been prepared by the Bureau of Motor Carriers and reviewed by the Bureau of Statistics of the ICC. All accidents during the period April 1 to Dec. 1, 1937, or a total of 4135 accidents are classified in tabular form according to the information gathered from the standard report form.



Studebaker has added a 1-ton "Fast Transport" combining full ton capacity with unusual comfort and speed. Body is 5 x 8 ft.

BENDIX DRIVE

NEW MERCHANDISING ASSORTMENT OF ORIGINAL EQUIPMENT DRIVES AND GENUINE PARTS

This No. 5 assortment of Bendix Drives and Bendix Drive Parts will service a large majority of the more popular cars and trucks. It will save you time and money — will assure you maximum profit for minimum investment and effort.

When you buy this No. 5 assortment (list price \$31.50, less usual trade discount), you get in addition the beautiful display cabinet illustrated above absolutely free with an

**CABINET
FREE**
with purchase of
BENDIX DRIVE ASSORTMENT
listing at
\$31.50
(less usual discount,
F.O.B. factory)



initial order! It has 25 drawer compartments, each properly tagged, for the small parts. It has a handy reference chart showing list prices and correct types of Bendix Drives and parts for popular cars and trucks. It's an ideal counter display. Perfect, too, for the work bench!

Get this cabinet now. Watch it boost sales on profitable Bendix Drives and Genuine Parts. Order through your distributor—or write us direct.

ECLIPSE MACHINE DIVISION
OF BENDIX AVIATION CORPORATION • ELMIRA, NEW YORK

When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL
JANUARY, 1939

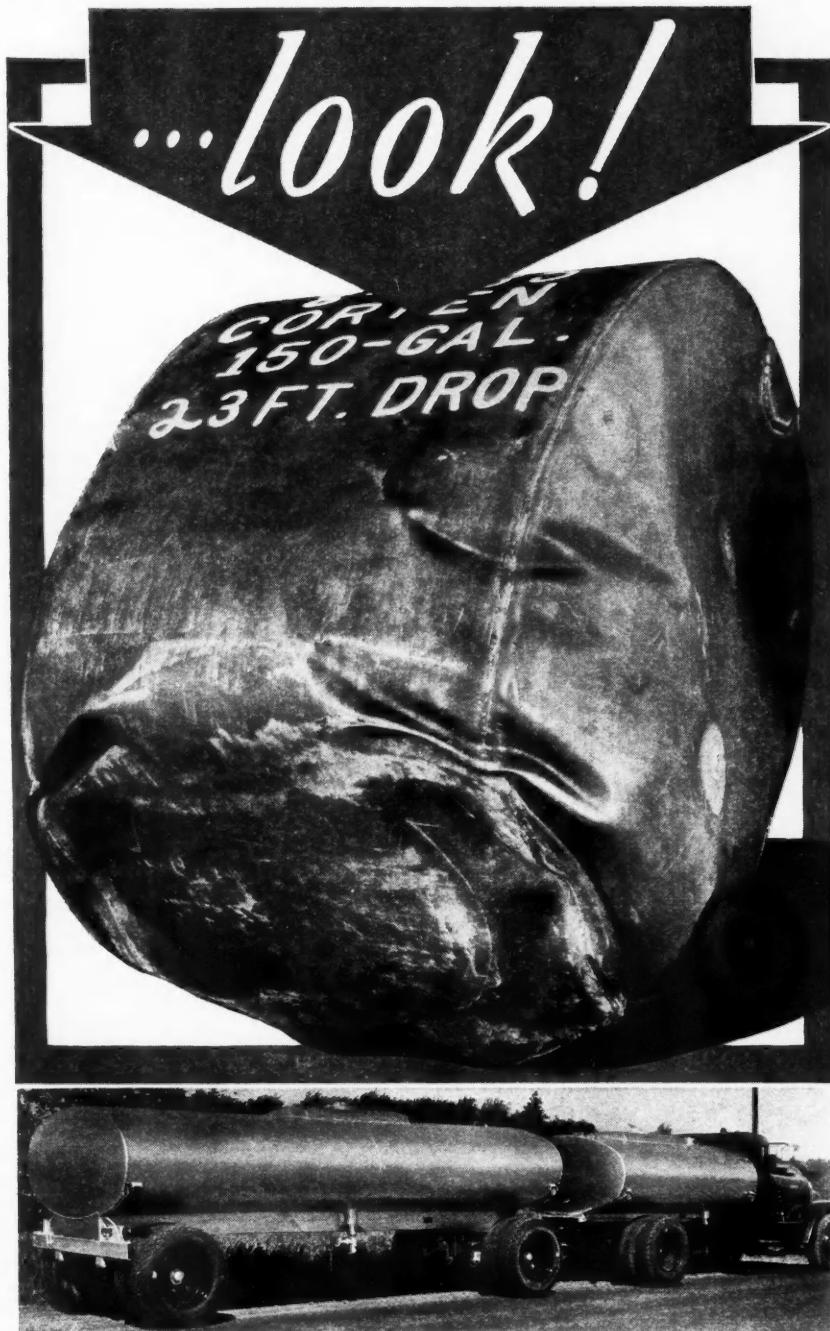
Can COR-TEN take it?

HERE'S a picture that shows at a glance why U·S·S Cor-Ten is the safest construction you can use for building gasoline hauling units lighter.

Made of 14 gauge Cor-Ten and filled with 150 gallons of water, this test tank was dropped smack on a wooden floor from a height of 23 feet. Sure it's banged up—in some places the welded seams are folded absolutely flat. But examination showed that no leaks had developed. Here's proof of Cor-Ten's marvelous resistance to impact and puncture. Shows you just how tight and downright tough Cor-Ten welded joints can be.

Tests like these, made by various tank makers with uniformly excellent results, have convinced them that they can bank on Cor-Ten in getting rid of dead weight in tank construction. Redesigning to use this inexpensive high tensile steel, they've trimmed hundreds of pounds off their tank trucks—and added an extra gallon of payload capacity for every 6½ pounds saved. Their 9000 gal. tanks now carry 350 extra gallons; 5000 gal. tanks carry 300 additional gallons; in 3500 gal. tanks, 150 extra gallons ride free; 3000 gal. tanks now haul 100 more gallons at no extra cost—all at no increase in total weight. Figure the profits out for yourself—they run up to \$100 a month in some cases.

U·S·S Cor-Ten has approximately twice the yield point of mild steel—has 4 to 6 times the resistance to atmospheric corrosion, yet in many applications it costs little if anything more to use. And remember, Cor-Ten can be formed and fabricated with only slight modifications from shop practice for mild steel. Our Cor-Ten book is available upon your request.



BUILT LIGHT WITH COR-TEN—Tank truck and trailer built by Beall Pipe & Tank Corp., Portland, Ore., for Goodman Oil Company, Boise, Idaho. Gross weight loaded—54,000 lbs. Truck tank weighs 2200 lbs.; capacity 1850 gals. Trailer tank weighs 3550 lbs.; carries 3500 gals.—Approximately one lb. per gal.

U·S·S HIGH TENSILE STEELS

AMERICAN STEEL & WIRE COMPANY, Cleveland, Chicago and New York

CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh and Chicago

COLUMBIA STEEL COMPANY, San Francisco • NATIONAL TUBE COMPANY, Pittsburgh

TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham

United States Steel Products Company, New York, Export Distributors • Scully Steel Products Company, Chicago, Warehouse Distributors



FREEZES

(CONTINUED FROM PAGE 31)
of the trucks, particularly the older ones, was greatly improved.

The greatest cause of road failures previously had been due to the ignition system — distributor points, plugs, cables, coils, etc. Under the preventive maintenance system these items are now checked every 5000 miles. Accordingly, road failures due to these causes have been practically eliminated. Likewise, loose

wheels, worn brake rods, loose spring clips that permit the springs to shift and lock the brakes, broken fan belts, loose universal joint bolts, bad lights, faulty clutch adjustment, broken mufflers and battery boxes, and faulty brakes, formerly all causes of frequent road failure, have now been eliminated. The application of the preventive maintenance schedules assures that all the above items are carefully inspected at sufficient intervals to prevent failure except through

abnormal breakage.

The schedules of the preventive maintenance system used by the Diamond Ice & Coal Co. are broken down into five general periods. These are at 1000, 5000, 15,000, 30,000 and 60,000-mile periods, respectively. Records of each truck's mileage are kept at the central maintenance office. Each afternoon telephone calls are made to the various garages, listing the trucks that are to be brought in to the central shop for maintenance work. When the driver brings his truck in for the day, he is notified to deliver it to the main shop for inspection. If only a 1000-mile inspection is due, he can get his truck the next morning, as all this work can be done by the night mechanic and greaser. The more complete overhaul jobs naturally lay a truck up for a day or more.

The 1000-mile inspection includes a general inspection of the engine and its cooling system, a check of the steering mechanism, wheels, brakes and rear end, and a complete chassis lubrication and check or change of engine oil.

The 5000-mile inspection includes a thorough check of the motor, such as spark plug gap and distributor point adjustment, valve setting, coil test, oil filter cleaning or change (filter elements are changed every 500 miles), clean carburetor air cleaner, etc. Also included is brake adjustment, pulling and packing front wheels, tightening and adjusting of front and rear ends, battery test, check of lighting system, etc.

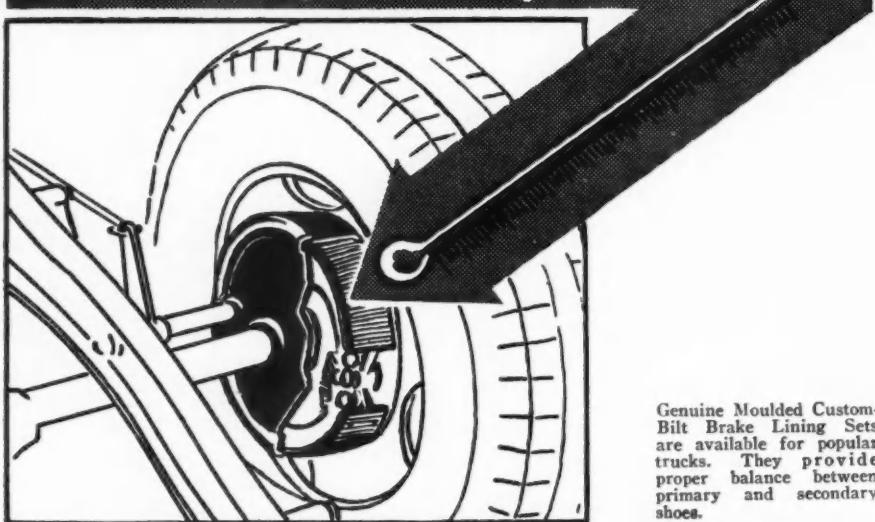
The maintenance work scheduled beyond 5000 miles has not as yet been actually applied, as the system has not been in operation long enough for the vehicles to have run more than 10,000 miles. However, the jobs scheduled for these later inspections have been laid out on the work sheets. The 15,000-mile check, as scheduled, is to be a more elaborate 5000-mile inspection, and will include such items as valve grinding, timing check, and body tightening.

The 30,000-mile inspection, as drawn up, adds to the above inspection these features: reline brake shoes, remove and clean starter and generator, inspect rear axle, transmission and universal joints, etc. The final 60,000-mile check is to be a complete overhaul, and includes

(TURN TO PAGE 76, PLEASE)

GATKE BRAKE BLOCKS

*operate efficiently
under all operating Temperatures*



Genuine Molded Custom-Bilt Brake Lining Sets are available for popular trucks. They provide proper balance between primary and secondary shoes.



Gatke Molded Brake Blocks and Liners will always give your equipment a safe, smooth, positive stop.

Your schedule can be winding mountain routes or on the straight-away . . . Gatke Brake Lining always helps you maintain a safe schedule.

Ask your Gatke Jobber or write

GATKE CORPORATION
228 N. La Salle St., Chicago, Illinois

GATKE BRAKE LINERS

MODERNIZE WITH COLOR →



WHERE TO USE IT . . . HOW TO USE IT . . . THAT'S THE JOB OF

SHERWIN-WILLIAMS TRANSPORTATION COLOR SERVICE

It takes more than color to get that "plus" return from your fleet. It takes the right colors properly used. Color can streamline your equipment—new or old—to give it the modern appearance that makes a favorable impression. It can identify your fleet, your company and your products. It can increase the visibility of your trucks—day or nite—increasing the safety factor. Above all, color can attract the desired attention to your name—make each unit serve as a powerful and valuable travelling advertisement. Many operators

report the added business from smartly and effectively colored trucks has converted paint maintenance costs into a real dividend paying proposition.

The S-W Transportation Color Service and the S-W Finishing Engineer can tell you which colors and finishes will do the most efficient, lasting and economical job for you. They will prepare actual color elevations. Look into these important services now. No cost or obligation. Write The Sherwin-Williams Co., Cleveland, Ohio and principal cities.

SHERWIN-WILLIAMS "OK" AUTOMOTIVE FINISHES

FREEZES

(CONTINUED FROM PAGE 74)

removing the rear axle and transmission. The motor and all mechanical equipment on the vehicle are to be torn down and reconditioned. The bodies and frames will be repainted, and the truck will come out looking like a brand new job. It is no idle boast of the Diamond Ice, that they have one of the best looking truck fleets operating in their territory.

The Diamond Ice fleet includes 93 trucks of nearly all makes. In physical make-up they vary from 7-ton coal trucks to large vans; from $\frac{1}{2}$ -ton panel jobs to open stake bodies. Some of the newest additions are 20 streamlined and completely insulated ice trucks. These range in size from $2\frac{1}{2}$ -ton units with a capacity of 13 cakes of ice, to 5-ton jobs carrying 25 ice cakes. In winter many of the older ice trucks are converted into tank trucks, by interchanging the ice body for a tank. This permits year-around operation of vehicles that might otherwise be of use only during certain seasons.

To keep a careful maintenance check on a fleet of this size and variety requires less bookkeeping than might be expected. Brady Willey, superintendent of fleet maintenance at the Diamond Ice shop, has arranged a neat wooden box on a long table to hold the complete records of his fleet. When this box is opened, the top displays typewritten sheets explaining the code used in enumerating all repairs. In the body section of the box is a pad of sheets three feet wide and nearly two feet long. There is one of these sheets numbered to correspond with the number of each vehicle. By means of the code symbols displayed in the lid of the box, complete records are kept on these sheets of every job done on any truck or car.

The mechanics working on a job fill out letter-size work sheets that correspond to the service job on hand. These sheets list everything to be done, and from the records filled in, Mr. Willey in turn fills in the master sheet. A glance at these master sheets tells him how his trucks are behaving. If repairs on a certain vehicle are repeating themselves, they are immediately shown up on

the master sheet. Likewise any weaknesses in the preventive system will soon appear on the records. By watching the stories told by these sheets, Mr. Willey has been able to modify his system until he gets the best results possible.

The use of a preventive maintenance system has permitted the shop to cut down on their stock of spare parts. At present less than \$2,000 worth of repair parts are stocked. All tire work is handled by an outside agency. As most of the trucks operate near Wilmington, even road changes are handled by the agency. This permits many of the 93 trucks to operate without spares, and considerably reduces the investment in tires.

All maintenance work is handled by four day mechanics, and one lubricating man and one mechanic at night. The excellent appearance of the trucks is kept up by a body man and two painters. The paint room is adjacent to and completely walled off from the main shop. The painting methods used are worth considering, as this fleet always presents a first class appearance.

When a truck is to be repainted from the metal out, the first step is to remove all old paint by means of a commercial paint remover and a scraping knife. The metal is then cleaned with gasoline, and a rust remover is applied to take off all spots of rust. The body next is washed with warm water. Over the clean metal then is applied a coat of red oxide mill primer. When this is dry surfacer is put on. Next the surface is glazed in and the rough spots smoothed. The surface is sanded down and cleaned. Following this treatment a coat of synthetic lacquer, well thinned, is sprayed over the entire surface. When this is dry a final coat of synthetic containing 10 per cent of thinner, is given the surface. After the lettering is put on, the job is finished.

When touching up scratches or repaired body and fender sections, the spot is first smoothed down, cleaned and given a coat of primer. After this coat is dry, the spot is glazed in, sanded down and given the final color coat. The best of painting equipment is provided for this work, as the company has a firm belief that the appearance of their fleet is one of their best advertisements.

FREE BOOKS

(CONTINUED FROM PAGE 17)

J—Latest EP Lube Data

Plunging fearlessly into the vital problems of extreme pressure lubricants, D. A. Stuart Oil Co. has published a comprehensive bulletin (No. 5) which traces the various stages in the development of EP lubes and makes public the results of important tests recently completed with the new Stuart "Oxidizer." Check "J" on the post card.

K—Snow Fighting Equipment

Recent literature from the Good Roads Machinery Corp. includes (1) a 68-page catalog of the company's complete line of snow plows, (2) a folder describing the new Champion snow plows with full power-hydraulic control for $1\frac{1}{2}$ to 2-ton trucks, (3) a folder on the Champion full power-hydraulic plows for 5 to 10 trucks, and (4) full details of the company's sand or gravel spreaders for combating sleet and ice. Check "K" on the post card and indicate by number the literature you desire.

L—Facts on Oil Filtering

Fleetmen interested in the old problem—"to filter or not to filter and how?" should read the lubrication facts presented in a 24-page booklet put out by the Reclaimo Mfg. Co. In addition to engineering details, there is a section answering most common questions and another presenting opinions of Reclaimo users. Check "L" on the post card for your copy.

POSTCARD BETWEEN PAGES 88 & 89.

Reo to Reorganize

A. J. Brandt of Detroit was appointed trustee for the Reo Motor Co. on Dec. 17, after the company had filed a petition seeking to reorganize under section 77b of the Bankruptcy Act. Reo's board of directors had removed Roland Campbell from the presidency on the preceding day.

It is understood that basically the company is in good financial position. Federal Court action was taken to offset a petition for state receivership taken by holders of only 4100 shares of stock and to permit reorganization to provide funds for current needs. Internal management troubles are reported to have exhausted current funds. Announcement of the company's 1939 line of trucks has not been cancelled.

Northill Expands Diesel Set-Up

National distribution for Covic Diesel engines is being rapidly completed by the Northill Company, Inc., Los Angeles. Regional managers for the Covic Diesel division to date include R. K. Johnson and David Bennett, 90 Pine St., New York; J. E. Oliphant, Marion, Ohio, and Louis Swenson, Chicago.

Distributors include Warren Norge Co. Inc., New York; Banthin Body Co., Inc., Bridgeport, Conn.; Larson Marine Co., Boston, Mass.; Bazzaro Engineering Co., Washington, D. C., and Sol Brancato & George Levine, New Haven, Conn.

AFTER HOURS

(CONTINUED FROM PAGE 21)

over 99 per cent of the interest on and retirement of State highway bonds is met out of special highway taxes, the proportion is naturally much smaller with respect to County and local bonds. The reasons for this are obvious. A large portion of these highways are purely local roads and land-service roads that are not of general motor use, thereby vastly increasing the responsibility of local governments, adjacent property, residents and industries, in bearing the cost of their construction and maintenance.

There is a definite trend towards the gradual assumption of local road bonds by States, especially with reference to bonds on roads of general motor use as reimbursements for local roads that may be added to the State system. There is even a more pronounced trend towards a pay-as-you-go program of local road construction. During the past four years, the annual contributions by States for work on county and local roads have averaged nearly a quarter of a billion dollars out of special highway taxes.

The steady improvement in the financial condition of the outstanding county and local road bonds, the increased redemptions and the materially reduced new issues and interest charges, clearly indicate that these obligations are on a firm footing and in a healthy state.

Thus it will be seen that the total outstanding highway bonds for all State, county and local governments totaled \$3,116,000,000 in 1937. This equals, by comparison, only two years of motor vehicle tax revenues. This total debt could be amortized and fully retired at an interest rate of 4 per cent, in 30 years at an annual total cost of \$116,187,000. This sum would be 11.1 per cent or only one-ninth of the annual special highway taxes paid by highway users. It is considerably less than the amounts that have been diverted annually from highway taxes to other than highway purposes.

Official figures of the U. S. Bureau of Public Roads show that from 1931 to 1937, inclusive, the total highway income was \$7,745,855,596. Out of this sum the States have not only built and maintained their highways,

met the interest payments on highway obligations to the extent of \$459,182,221, and reduced their obligations \$437,135,906, but during that time they have "made a profit," so to speak, off the highway user, amounting all told to \$791,974,000, which they have diverted to purposes other than highways. Diversion back in 1925 amounted to 1.8 per cent of the total highway revenues. In 1937 it amounted to 13.5 per cent.

Even the Federal Government paid out less than it made the automotive industry and highway users pay in. From 1917 to June, 1937, Federal expenditures for State and local highway amounted to more than \$2,483,000,000. During the same period Federal gasoline and other automotive taxes produced \$2,618,000,000. Thus the Federal Government made a net profit of more than \$194,000,000 on its investment in Federal and State highways.

That much for highway debts.

Trucks Pay Their Share of Taxes

Now, is the truck paying its share of all the taxes that are levied to liquidate these debts? Mr. Splawn says forthrightly that it isn't. Again, let us analyze the facts.

In the seven-year period from 1931 to 1937, inclusive, special taxes paid by motor trucks have totaled \$2,218,973,000. These payments do not include personal property taxes on trucks in operation, income and property taxes on garages, terminals, repair shops and trucking companies.

In this same period the Class 1 steam railroads paid a total of \$1,954,009,954.

In other words, trucks alone actually paid \$264,963,046 more in taxes during the period than the railroads.

It is noteworthy that in this period railroad taxes increased only 8.5 per cent whereas truck taxes increased 76 per cent.

Motor trucks comprise only about 14 per cent of the motor vehicle registrations but are paying about 27 per cent of the motor vehicle taxes. Tax figures indicate plainly that trucks in particular are not only paying their share of taxes for highways and other purposes, but much more than an equitable share.

Now how about Mr. Splawn's implication that the competition of trucks threaten financial disaster to

the railroads? Let's do some more analyzing.

In response to many requests for authentic and impartial information, the Cleveland Trust Co., under the direction of Leonard P. Ayres, noted economist, made a study of all American freight transported in each of the past 13 years (1925-1937) by each of the four major freight-carrying agencies. The study showed that in 1925 motor trucks carried 2 per cent of the freight; pipe lines, 5 per cent; waterways, 17 per cent, and railroads, 76 per cent. The approximate standing in 1937 was: motor trucks, 5 per cent; pipe lines, 8 per cent; waterways, 21 per cent; railroads, 66 per cent.

Thus while railroads were losing 10 per cent, the trucks increased their tonnage only 3 per cent.

On the other hand, Judge R. V. Fletcher, general counsel and vice-president of the Association of American Railroads, has stated that trucks carry 7.96 per cent of the freight. This figure certainly is much higher than Colonel Ayres' but for the purposes of this subject let us accept it.

Now in 1936, the last figures published, the railway freight revenues were \$3,308,500,000. Applying Judge Fletcher's percentages we find that the freight revenues of trucks would be \$390,200,000. In that same year the movement of motor vehicles, parts, tires, gasoline, etc., contributed \$450,732,000 to the railroad coffers. In brief, highway transportation gave the railroads \$60,532,000 more in revenue than motor trucks took away.

The truth of the matter is that given all the freight hauled by their intercity trucking competitors, the railroads would not be relieved from their present plight. The truth is, as sensible railroad executives (including Judge Fletcher) have said on many occasions, "if business could be revived, the railroads would revive also."

Coming now to the matter of "destruction of the highways by commercial vehicles," we can only express amazement that Mr. Splawn should prefer to disregard completely the fact-findings of experts, notably the U. S. Bureau of Public Roads, and elect to support a fallacy instigated and promoted by the railroads.

(TURN TO PAGE 78, PLEASE)

AFTER HOURS

(CONTINUED FROM PAGE 77)

Finally, we hope our readers will join in defeating Mr. Splawn's personal purge of the trucking industry by making known their own feelings to the public utilities commissioners in their own states. It's high time the Splawns in this country came to a realization that the industry has grown up and will no longer tolerate being the "whipping boy" of the railroads.

NEW PRODUCTS

(CONTINUED FROM PAGE 41)

Permatex Toon-Oyl



A new carbon-gum solvent known as Toon-Oyl has recently been added to the Permatex line. It is designed for crankcase use, is harmless to cadmium-silver and copper-lead bearings and is said to dissolve gum formations injurious to valve guides and piston

rings. Full details from Permatex Co., Inc., Sheepshead Bay, N. Y.

Heavy-Duty Purolator

A large-size N-type Purolator for gasoline or diesel engines with crankcase capacities from 14 to 24 qt. has just been introduced. It is known as Model 29 and has all of the characteristics of other



N-type filters including replaceable cartridge and the ability to remove both solids and discoloration from the oil. Write Motor Improvements, Inc., 365 Frelinghuysen Ave., Newark, N. J.



SAFER
LIGHT

SAFER
SIGHT

These Products Are SAFE

Now you can be sure the foglites, directional signals, stoplites, flares, and other safety devices you use are safe. You can be sure they're built right to give low operating costs per mile.

These tags CERTIFY that the product has passed recognized laboratory tests. They are now attached to every Do-Ray product certified as to Safer Light—Safer Sight.

For the first time you can buy safety lighting equipment with the full assurance of quality and service attached to every item. Get complete information now. Ask your jobber or write

DO-RAY LAMP COMPANY
1458 S. Michigan Ave., Chicago



Do-Ray's New
Directional Signal
Is Certified



The Do-Ray Nobby
Reflex Signal
Is Certified

DO-RAY

CERTIFIED SAFETY LIGHTING AND REFLECTING EQUIPMENT

When writing to advertisers please mention Commercial Car Journal



Furnished in four capacities from 250 lb. to 1000 lb. The 500 lb. hoist weighs but 85 lb. Full details from Chisholm Moore Hoist Corp., 178 Fremont Ave., Tonawanda, N. Y.

MORE NEW PRODUCTS ON PAGE 94

COMMERCIAL CAR JOURNAL
JANUARY, 1939



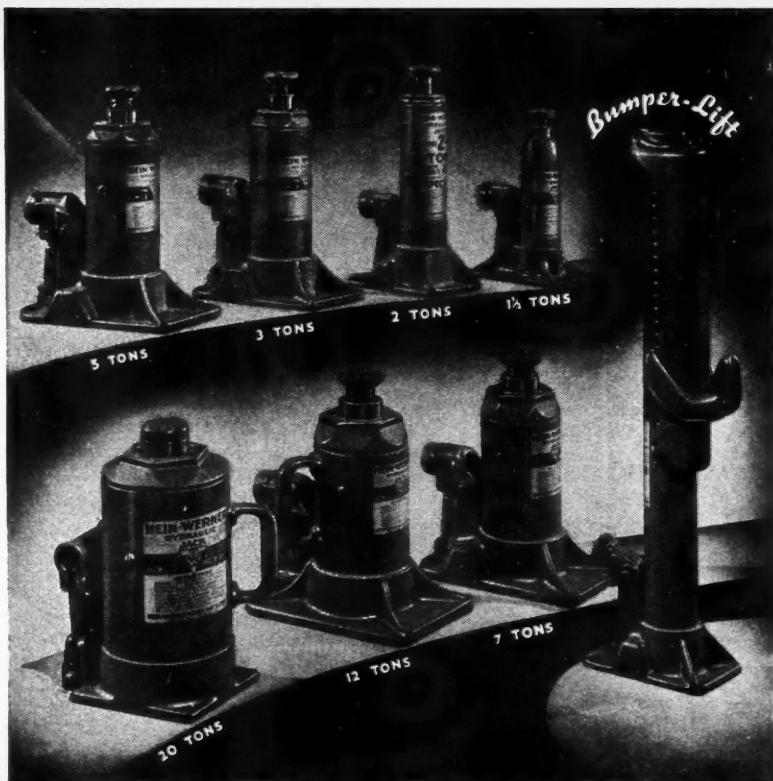
Atlas was a piker

- - compared to the lifting power of a

HEIN-WERNER HYDRAULIC JACK



7 ton capacity model, shown above, has low of 8" ... Hydraulic lift, 5 1/4" ... Extension screw 3" ... High of 16 1/4" ... Wt. 25 lbs.



Atlas, a greek myth, was supposed to support the heavens—but the story of his strength was only a myth. In contrast—the lifting power of a Hein-Werner Hydraulic Jack is a proven fact.

Before leaving the factory, all H-W truck jacks are tested at 1 1/2 times their rated capacity. These jacks are compact, powerful and SAFE—in addition to being built right and priced right.

Complete line includes the "Bumper-Lift" and the "Bullet" 1 1/2 ton capacity jacks for passenger cars...Also 2 ton "Light Truck Special," 3, 5 and 7 ton capacity jacks for trucks, and 12 and 20 ton jacks for trucks and buses... And a complete line of FLOOR JACKS—1 1/2, 2, 3 and 4 ton capacity . . . Ask your jobber or write us for 1939 prices and details on complete line.

FEW MODELS ENGINEERED TO DO THE WORK OF MANY
HEIN-WERNER
hydraulic JACKS

HEIN-WERNER MOTOR PARTS CORP.
Waukesha, Wisconsin

DIRTY PARTS...CLEANED LIKE NEW!



Carburetors, fuel pumps and other automotive parts are quickly and completely cleaned with MAGNUS NO. 78. After a simple 30-minute soak in a COLD solution of it, they come out clean as when new.

Used COLD and mixed simply with equal parts of water, you are always ready to clean when you use MAGNUS NO. 78. There's no lost time waiting for tanks to heat up—no heating expense—no gasoline or kerosene.

In addition, MAGNUS NO. 78 is non-corrosive to metals—will not injure gaskets or packings.

A nearby Service Representative will gladly demonstrate MAGNUS NO. 78 in your own shop. There's no obligation. Write to have one call without delay.

FREE

48-page Automotive Cleaning Handbook. Goes thoroughly into all cleaning problems connected with truck operation and maintenance. Send for your copy TODAY.

MAGNUS CHEMICAL COMPANY

Manufacturers of Cleaning Materials, Industrial Soaps, Metallic Soaps, Sulfonated Oils, Emulsifying Agents and Metal Working Lubricants.

38 South Avenue

Garwood, N. J.



MAGNUS CLEANERS

Ford Economy Runs

Covering a grand total of more than 95,000 miles with loads averaging 6,000 lb., eighteen Ford V-8 134-inch wheelbase cab-over-engine trucks obtained fuel mileages

ranging up to 13½ miles to the gallon in long-distance economy test runs held recently in various parts of the country, according to reports to the home offices of the Ford Motor Co. The test runs were held under the direction of Ford branches.

The highest fuel mileage of 13½ miles to the gallon was obtained on a test by the Oklahoma City branch. The lowest, 8.7 miles to the gallon, was recorded on an economy run through a thickly populated area in the East. However, 78,000 of the 95,000 miles were averaged at better than 11 miles to the gallon.

The highest average speed was 43 m.p.h., the lowest 25.4 m.p.h. No oil was added between changes for the entire 95,000 miles. All the units were standard in every respect.

Anderson Ends Receivership

Federal Judge Thomas W. Slick recently ordered termination of the receivership of the Anderson Co., Gary, Ind., entered on Sept. 17, 1932.

The company emerges from receivership without reorganization or refinancing, with no new capital added, and its debt of \$163,000 paid in full.

Illinois to Consider Week-End Ban

It is reported that the Illinois Commerce Commission on Jan. 11 will consider a proposal to bar all trucks from state highways on week-ends. It is understood that proceedings were commenced after "complaints" by representatives of the Brotherhood of Railway Trainmen.

Money-Wise Fleet Operators Use BEAURLINE FOUNTAINBRUSHES

(Patented)

Beaurline, the original fountain type car washing brush, is designed to save time, effort and space in busy fleet shops. That's why money-wise fleet operators everywhere are turning to Beaurline for the solution to their washing problems.

Write for complete information on several new models, shapes and sizes, and for new low prices.

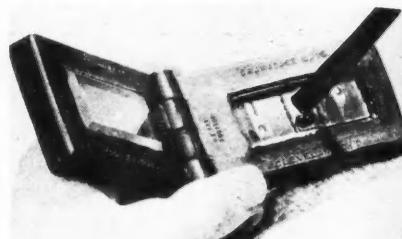
BEAURLINE FOUNTAIN BRUSH CO.
1243 S. Wabash Avenue, Chicago

NEW PRODUCTS

(CONTINUED FROM PAGE 78)

Lub-rim-eter Tester

A new oil testing device known as the Lub-rim-eter enables the fleetman to make three simple, yet indicative tests in a jiffy. It consists of two glass plates incased in resilient neoprene frames. In test No. 1 crankcase oil is compared with photo standards on the edge of one glass. Test



No. 2 is accomplished by rubbing glasses together with oil film between, detecting grit. Test No. 3 determines surface tension by pulling the oiled glasses apart. A convenient chart aids in tabulating results. Full details from Inspection Machinery Co., 5511 Euclid Ave., Cleveland, Ohio.

Tung-Sol Flashtester

An ingenious and practical device for testing lamp bulbs should find a place in any fleetman's kit. It consists of an ordinary flashlight fitted with a pair of open contacts on one side. A good bulb, held across the contacts, lights the flashlight. For more details, get in touch with Tung-Sol Lamp Works, Inc., 95 Eighth Ave., Newark, N. J.

GRAMM POWER PLANTS

consisting of engine, transmission, clutch, and all accessories ready to drop in old truck.

Fleet owners and Dealers write for prices.

GRAMM MOTOR TRUCK CORP.
DELPHOS, OHIO



17,000 to 40,000 LBS. GROSS CAPACITY
TRUXMORE 3rd Axle is engineered and built to produce the lowest hauling costs per ton mile with greater safety. Made in 5 sizes to fit any make or type truck you choose.

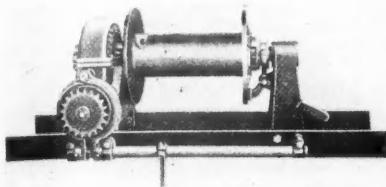
Write to Truck Equipment Co., Inc.
1791 Fillmore Ave., Buffalo, N. Y.
Branches and Dealers in Principal Cities

TRUXMORE
WORLD'S BEST 3RD AXLE

COMMERCIAL CAR JOURNAL
JANUARY, 1939

Tulsa Light-Weight Winch

A new light weight Tulsa Winch has been designed for use on $\frac{1}{2}$ and $\frac{3}{4}$ -ton trucks fitted with standard S.A.E. 6 hole power take-off. The unit handles a safe working load of 6000 lb., weighs only 295 lb. and has a reversible worm and gear which allows the load to lower itself. A



lever in the cab controls the worm brake. Fleet men interested in power winch equipment for wrecking cranes, draymen's trucks or utility service will do well to write Tulsa Winch Mfg. Corp., 815 E. First St., Tulsa, Okla., for full details of Model 14.

Two New Testing Units

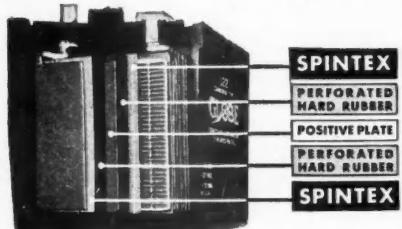


An electric r.p.m. meter and exhaust gas analyzer and a new "King" battery tester have been announced by the Electric Heat Control Co., 9125 Inman Ave., Cleveland, Ohio. The r.p.m. meter reads in two scales from 1 to 2500 or 1 to 5000, and the needle remains steady at any speed. It is merely necessary to clip on primary post and over any high tension wire and set for the proper number of cylinders.

The battery tester has an $8\frac{1}{2}$ in. dial and provides a one, two, three point switch for individual cell testing. Comparison readings on batteries from 11 to 21 plates can also be made. Full details of both instruments may be secured by addressing the manufacturer.

Dual Insulated Batteries

A new line of dual insulated batteries expressly designed for commercial and light truck service is announced by Globe. Thin, perforated, hard rubber sheets on each side of the positive plates hold the oxides firmly while the special all-rubber ribbed sheets known as Spintex permit the



acid to rise and circulate rapidly. It is virtually a truck battery in a passenger car type of container. For full details, address Globe-Union, Inc., 900 E. Keefe Ave., Milwaukee, Wis.

(TURN TO PAGE 86, PLEASE)

WHEN YOU NEED BETTER THAN "4-WHEEL DRIVE"



"What is better than 4-wheel drive", you ask? Only one thing—WALTER FOUR-POINT POSITIVE DRIVE.

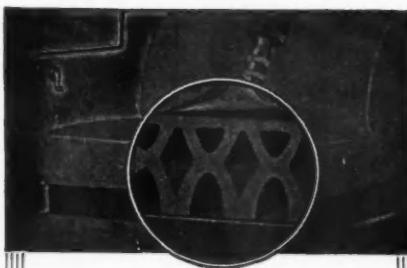
For Walter Snow Fighters and Tractor Trucks are the only vehicles equipped with a differential action that automatically proportions the power among the wheels according to their requirements at any instant. The Walter Patented Automatic Lock Differentials divide the power so that the wheels with least traction get the least and those with the most traction the most power. If one wheel should lose traction momentarily, its mate does not go on a "sympathy strike", but continues to operate under full power.

Walter Snow Fighters, with their superior differential action, unique suspended double reduction drive, exceptionally powerful motors and scientifically correct weight distribution, offer you the greatest possible assurance of open roads and unhindered traffic after heavy blizzards. And for the tougher hauling jobs, too, Walter Four-Point Positive Drive has been the solution to many an "impossible" problem. Send for literature.

WALTER MOTOR TRUCK CO.

1001-19 IRVING AVE., RIDGEWOOD, QUEENS, NEW YORK

**GET LONGER WEAR—
SAVE MONEY with Black Diamond
SEAT CUSHIONS**



Whatever your seating problems may be, Black Diamond seat cushions and back rests offer the most durable and economical answer. Made of resilient semi-sponge rubber and incorporating the exclusive patented Diamond Grid construction, they'll eliminate upkeep expense and give endless miles of improved riding comfort. Made to fit any type vehicle. Ask for details and prices.

KARPEX MANUFACTURING CO.
1424 E. 19th St., Indianapolis, Ind.

Sterling MOTOR TRUCKS

DIESEL AND GASOLINE

GREATER PROFITS

Cost sheets tell the story! Net savings of over \$15,000.00 per truck. An achievement of Sterling Diesel powered motor trucks • —trucks which have traveled in excess of one-half million miles and are still in operation.

Be sure of maximum returns on investment. Select Sterling motor trucks for superior performance and lower operating costs. Write for full information.

STERLING MOTORS CORPORATION
MILWAUKEE, WISCONSIN

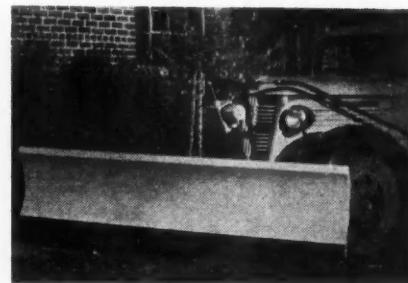
**KEEP YOUR
VEHICLES MOVING
ECONOMICALLY**

with
**HALL VALVE SERVICING
EQUIPMENT**

Ask Your Jobber or write
THE HALL MFG. CO.
TOLEDO, OHIO

Hercules Light-Duty Plow

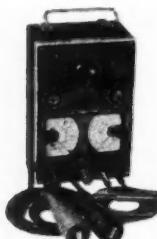
The Hercules Steel Products Co., Galion, Ohio, announces the manufacture of a quick-reversible snow plow with electrically operated hydraulic lift. It is known as the



"Hercules Model A Snow Plow" and is designed for 1½ and 2-ton trucks. A Meyer Safety Blade is used which enables the plow to scrape directly on the pavement. The blade operates as a safety trip, riding the plow over ordinary road obstructions without the use of springs or other generally employed tripping devices.

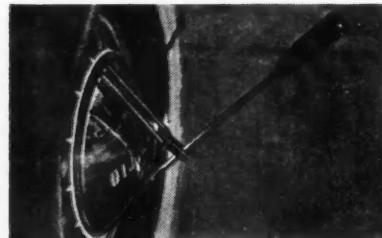
New Testing Instruments

Three new tune-up testing devices should be an asset for any shop. They have been introduced by the Electro Products Co., 621 East 216th St., New York. The new Trouble Shooter is for electrical check up of virtually every kind and includes an all-purpose DC voltmeter for checking battery, generator and starting circuits as well as for leaks and shorts in any line. The Acroset is a combined voltmeter, ammeter and variable resistance for setting relays, charging rates, regulators, etc. The Power Peaker consists of an all-purpose vacuum gage for making virtually any test. Full details of any of these instruments may be secured from the manufacturer.



Giffy-Kap Hub Remover

Replacing the inefficient screw driver or cold chisel in removing polished hub caps, the new Giffy-Kap hub cap remover should greatly reduce the chances of scratching paint or chromium. The device consists of a highly polished steel lever spooned



shaped on one end and fitted with a wood handle on the other. In conjunction with the double hooks furnished it does the job quickly. Full details from Wecco Mfg. Co., Owings Mills, Md.

**AUTOPULSE
ELECTRIC FUEL PUMP**

- Uninterrupted Schedules
- Instant Starting
- Greater Economy
- No Vapor Lock
- Added Protection

AUTOPULSE CORP., DETROIT



**TIMKEN
TAPERED ROLLER BEARINGS**

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

Avoid Vapor Lock

An electric fuel pump, installed close to fuel tank, it pushes fuel to engine, avoiding vapor lock. Thoroughly reliable. Applicable to any gasoline-driven vehicle. Will not flood.

**KING-SEELEY CORPORATION
ANN ARBOR, MICH.**

KS FUEL PUMP

**IT PAYS TO BUY
EDWARDS
QUALITY
SEMI-TRAILERS**

**EDWARDS IRON WORKS, INC.
SOUTH BEND,
INDIANA**



Will Handle 13 to 15 Tons! — Thornton Four-Rear-Wheel Drive, engineered into standard 1½- to 3-ton chassis—extra capacity, greater traction, double pulling power! Does work of trucks twice as large at almost half cost. Write today. Thornton Tandem Co., 8701 Grinnell Ave., Detroit

THORNTON-eered
for TRACTION

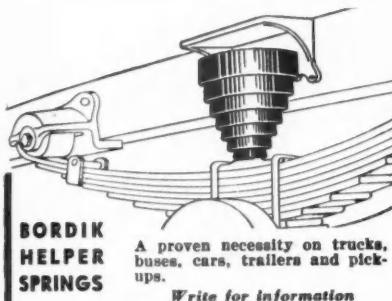
MARMON-HERRINGTON
All-Wheel-Drive FORD V-8

Half The Price You'd Expect!

Marmon-Herrington converts all Ford trucks, commercial and passenger cars to all-wheel-drive. Write today for literature and prices. Unusual profit opportunity for dealers in open territory.

MARMON-HERRINGTON COMPANY, Inc.
Indianapolis, Indiana

For information on
SHULER AXLES
see advertisement in the
December issue



Zink-Bordik Products, Inc.
421 East Adams St. DETROIT, MICHIGAN

Specify
CLAW
Double-Duty
TRUCK CHAINS
Columbus McKinnon Chain Corp.
TONAWANDA, N. Y.

HOISTS
BODIES
TANKS

HEIL
Quality Products

SNOW PLOWS
SCRAPERS

MANUFACTURED BY
THE HEIL CO.
FACTORIES:
MILWAUKEE - - - WISCONSIN
HILLSIDE - - - NEW JERSEY
Branches and Distributors Everywhere

COMMERCIAL CAR JOURNAL
JANUARY, 1939

When writing to advertisers please mention Commercial Car Journal

Auto-Lite Plug Cleaner

A new-type spark plug cleaner which cleanses all size plugs with maximum efficiency and without injury to electrodes or insulators is being introduced by Auto-Lite. A new Ziramic cleaning compound and screened to a definite grain size which is ground said to give a thorough yet less—harsh treatment than accorded by sand or other compounds is also announced.

Features of the cleaner include an air pressure gage and regulating valve and a newly designed venturi which offers a wide pressure operating range for all types of plug conditions. It is housed in an ultra-modern cabinet with protective hood which holds dust to a minimum. Address the Electric Auto Lite Co., Toledo, Ohio, for full details.



Electrical Connector

An automatically locking tractor-trailer connector at a popular price is offered by the Berg Mfg. Co., 3810 Montrose Ave., Chicago. Freedom from trailer light and signal failures is said to be assured because the connector is weather and vibration proof, and carries no strain. It weighs but 1½ lb. Full details may be secured from the maker.

(MORE NEW PRODUCTS ON PAGE 96)

Federal Salesmen Hold Annual Meet

Members of the Star Salesmen's Club of the Federal Motor Truck Co., held their 1938 meeting at the Detroit Leland Hotel on Dec. 12 and 13. These 24 salesmen, who were responsible for more than three quarter million dollars of truck sales during 1938, were honor guests of the company at a banquet on Dec. 12, attended by officials of the company and some of its principal suppliers.

K. M. Schaefer, general sales manager, awarded prizes to three individual leaders: Marion Braultatch, Roberts Motor Co., Portland, Ore.; G. C. LaJoie, Canada Motor Car Co., Montreal, Que.; and R. E. Hershey, of the company's Newark, N. J., branch.

In a brief discussion of sales prospects in the truck field during 1939, Ray W. Rudden, president, emphasized that announcement of addition of a ¾-ton, light-duty truck to the Federal line soon after the first of the year is being counted on materially to add to the company's anticipated increase in sales.

ICC Postpones Hours Rule

The Interstate Commerce Commission has again postponed the effective date of the hours of service rules governing interstate drivers from Dec. 31 to Jan. 31. Regulations with regard to bus drivers became effective Oct. 1 with the exception of the driver's log requirement.

"WOULDN'T USE ANYTHING BUT ALEMITE"



SAY THOUSANDS
OF FLEET OWNERS

about Alemite Equipment
and Alemite Lubricants

FLEET OWNERS from coast to coast depend on Alemite Lubrication Equipment and Alemite Lubricants to keep trucks rolling and keep down maintenance costs. Thousands of them echo the words of this big Buffalo operator, whose equipment is shown above, when he says, "Wouldn't use anything but Alemite!" (Name on request.)

Whether you operate ten trucks or a hundred, Alemite's complete line of proved equipment and lubricants can save your time, save your equipment, and cut your maintenance costs! Alemite Guns are built for heavy duty service. There's a size for every fleet. Write for catalog!



Alemite Power Gun
Model 6528

Holds 40 lbs. heavy lubricant; develops 33 times available air pressure; operates on 100 to 200 lbs. of air. Easily portable.



Alemite Barrel Pump
Model 6700

Pumps from original drum; operates on 75 to 175 lbs. of air; develops up to 6000 lbs. pressure, depending on piston ratio.

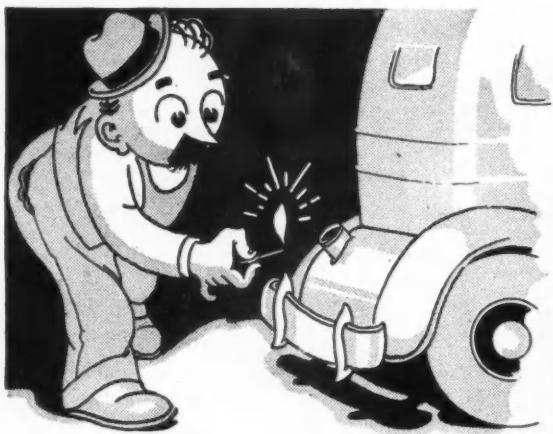
ALEMITE

REG. U. S. PAT. OFF.

A Subsidiary of Stewart-Warner Corporation
1876 Diversey Parkway, Chicago, Ill.

Stewart-Warner-Alemite Corporation
of Canada, Ltd., Belleville, Ontario

WORLD'S LARGEST MANUFACTURER OF
LUBRICATION PRODUCTS

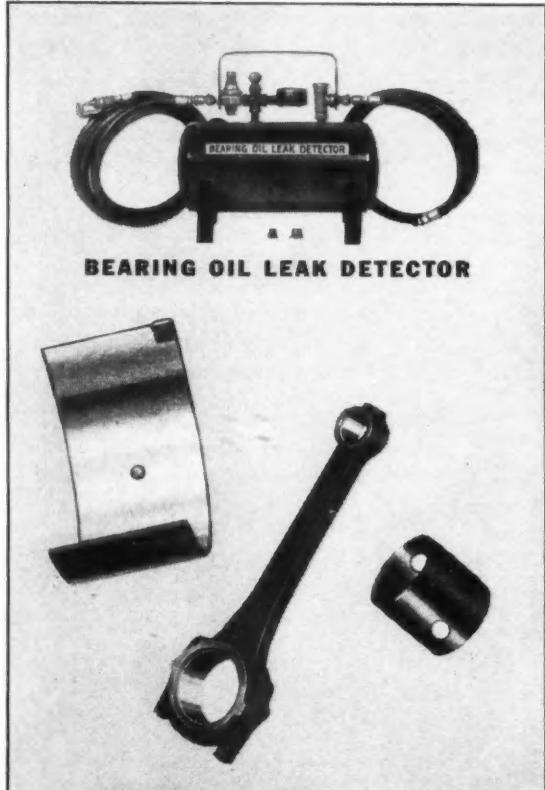


Why take a chance?

DON'T GUESS

at the cause of

OIL PUMPING



BEARING OIL LEAK DETECTOR

Why take a chance on doing a job twice due to partial, ineffective oil control service? Always check the bearings. If worn, replace in sets with Federal-Mogul and you'll know the job is 100% correct!

The Federal-Mogul Bearing Oil Leak Detector is a compact, portable, scientific instrument which permits you to quickly test all bearings under accurate, maintained oil pressure.

FEDERAL-MOGUL CORPORATION
4805 JOHN R ST. • DETROIT, MICHIGAN

FREE SERVICE MANUAL—Only complete, practical engine bearing service manual ever published. While supply lasts we will send one copy FREE to each service man writing for it—get your copy TODAY.

FEDERAL
Mogul



ORIGINAL MANUFACTURER OF THE ONLY COMPLETE BEARING SERVICE LINE

When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL
JANUARY, 1939

THE EDITORS OF
COMMERCIAL
CAR JOURNAL

are already busily engaged in compiling vital statistics and other invaluable information about the industry for the

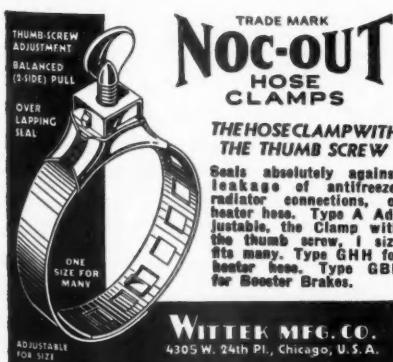
FLEET OPERATORS'
REFERENCE ANNUAL
which will be published
APRIL 1, 1939

Additional copies of this issue are printed each year to meet the extra demand, but this supply is quickly exhausted. If you plan to order additional copies of the 1939 issue, at \$1.00 per copy, you are urged to send your reservation early.



CHILTON COMPANY
Chestnut & 56th Sts., Phila., Pa.

Trucktor
CREATES RELIABLE
6 WHEEL TRUCKS
• • •
PROFITABLE - ECONOMICAL
Safest Vehicles On The Road
THE TRUCKTOR CORPORATION
156 WILSON AVE. NEWARK, N. J.



HEAT-TREATED FRAMES

(CONTINUED FROM PAGE 39)

Longer life—four fleets.
Flexible frame—three fleets.
Lighter frame—three fleets.
Carries heavier loads—three fleets.
Lower maintenance costs — three fleets.

Accompanying these reasons were some interesting comments.

One operator of eight trucks said: "On trucks with a long wheelbase we have taken some measurements when the trucks were loaded and found that we have a frame deflection in back of the cab as high as 1½ in. Many times this make of truck was operated under such conditions and found that the frame had taken no permanent set due to the fact, as I see it, that the frame had been heat-treated. On trucks of another make, the same deflection has been noted but after a year or so of work we found that the frame had taken a permanent set at a point directly behind the cab. The frames on the latter trucks were not heat-treated. That is the reason why we are influenced in the choice of a truck by the fact that it must have a heat-treated frame."

Another operator (eight trucks) said: "A few years back when we carried overloads on heavy duty trucks the frame had to be reinforced by a so-called fishplate. The process of heat-treating the frame had taken care of that problem."

Came also a comparison from a 49-truck fleet: "We still have some 1917 trucks with 7-in. heat-treated frames which have never had a broken frame. They have sprung down from time to time but we would straighten them up and they would last 2 or 3 years, whereas on some of the newer trucks carrying less weight, 9-in. to 12-in. pressed steel frames have broken in two and had to be fishplated."

From a specialized fleet (160 trucks): "We have never specified heat-treated frames, but about 90 per cent of our fleet is so equipped. The 10 per cent that are not have given us trouble, particularly in plowing snow when the plow strikes an unseen obstruction."

From a dump fleet (11 trucks): "On our trucks used in hauling stone (TURN TO PAGE 92, PLEASE)



McKay Multi-Grip Double-Bar-Reinforced Truck Chains

THE MCKAY COMPANY
MCKAY BLDG. PITTSBURGH, PA.

FRINK SNO-PLOWS

REG. U. S. PAT. OFF.
Both "V" TYPE and
ONE WAY BLADE TYPE
hand or power hydraulic control

FOR ALL MOTOR TRUCKS
FROM 1½ to 10 TONS

Write for catalog 38AC and 38BC with discount to truck dealers.
CARL H. FRINK, Mfr., CLAYTON, 1000 Ill., N. Y.
DAVENPORT-BESLER CORP., DAVENPORT, IOWA
FRINK SNO-PLOWS OF CAN. Ltd., TORONTO, ONT.

FEDERAL

THE HANDSOMEST TRUCK ON THE ROAD

43 models . . . ¾ to 8 ton
4 and 6 wheelers
conventional and cab-over-engine types

FEDERAL MOTOR TRUCK CO.
Detroit, Michigan

66

Did you say FREE
NO-FILM for 12 Trucks?

99

ANSWER—Yes, it's yours for the asking. The president of your Corporation is not a mechanic but he does know how your trucks look—so does the public.

Cleaning with NO-FILM is not magic but it is sound, economical business.

The secret of NO-FILM's dirt-destroying success? It's endowed with energetic chemical action; it never leaves paint-killing film!

So send for your FREE quart of No-Film today (the offer is limited). Just tell us the number of trucks in your fleet, and we'll include our Technical Bulletins on Truck Maintenance.

The Major Corp.—Engineers and Chemists
151 W. 46th St., New York City

before you start—think of the finish
NO-FILM
REG. U. S. PAT. OFF.



- No Gear Shifting
- Lower Operating Costs
- Greater Fuel Economy
- Reduced Maintenance Costs
- More Efficient Power Transmission
- Start-stop Time Reduced

WALKER VEHICLE COMPANY
DIVISION OF THE YALE & TOWNE MFG. CO.
Manufacturers of Electric and Gas-Electric Trucks
101 WEST 87TH STREET, CHICAGO, ILLINOIS

Insist Upon ARROW Signals

Demand, insist upon and get this extra Arrow Quality—it costs no more!

ARROW SAFETY DEVICE COMPANY, INC.
MEDFORD, NEW JERSEY

WAUKESHA
• Comet Diesel
• Hesselman
• Gasoline
• Hy-Powr
• Ricardo Head
ENGINES



WOOD
HYDRAULIC
HOISTS and DUMP BODIES
EVERY SIZE and TYPE
for every hauling job

GAR WOOD INDUSTRIES, INC.
DETROIT, MICH.
Branches and Distributors Everywhere

(CONTINUED FROM PAGE 91)

from a quarry over makeshift roads, heat-treated frames do not break while those not heat-treated break in this rough treatment."

An oil hauler (55 trucks) stated: "I have found that on the old style frames it was necessary to reinforce them in order to prevent them from breaking at the back of the cab. With the heat-treated frame I have found that we do not have to do this."

A freight hauler (113 trucks) said: "From our experience, a heat-treated frame can be compared with an ordinary frame by likening a tempered spring leaf with a bar of ordinary untreated machinery steel of same size and shape. The heat-treated frames are springy and give slightly under strain and spring back in place. The ordinary frame for the same strength must be made of much heavier material and when such a frame becomes sprung or bent it stays that way."

Another hauler (250 trucks) went a little deeper: "While I have stated a preference for heat-treated frames that does not tell the whole story. I would rather say that I prefer an alloy steel frame to an open-hearth steel frame. Even then, unless there is sufficient depth and thickness of channels and an adequate number of cross members properly spaced, braced and gusseted, an alloy or any other type of frame would be unsatisfactory. It is my opinion that the frame of a truck has greater bearing on the life of a truck than any other single unit."

A fleet of 735 trucks: "We think a heat-treated frame desirable because we use our trucks many years before replacement. Never less than 10 years. We have found carbon steel frames, not heat-treated, to fail much faster than those that are heat-treated. Our personal preference is for an alloy steel frame, heat-treated, because

Type T
MASTER-LIGHT

for Truck Service

Cab Roof Mounting

Revolves 360°

No Blind Spots

Speeds Runs and

Deliveries

Details on Request

CARPENTER MFG. CO.
CAMBRIDGE, MASS.



WARFORD
HEAVY DUTY
DUAL-AXLE-DRIVE
TRUCKS

The Warford Corporation
44 Whitehall St., New York City

SIMMONS

Silver King JACKS
Your best buy for ANY lifting need.



Send for Complete Catalog → The SIMMONS MANUFACTURING CO. ASHLAND OHIO

Available Trucks

Builders of fine Motor Trucks, Tractors, Trailers and Buses since 1910. Capacities from 1½ to 10 tons. Write for bulletin

AVAILABLE TRUCK COMPANY
2501 Elston Ave. Chicago, Illinois

As Often as You Ask the Question

© COMMERCIAL CAR JOURNAL LEADS ©

in Fleet Operator Reader Preference

DEGREASER

Not only dissolves grease and oil but emulsifies it as well
Your wholesale jobber has GUNK CONCENTRATE or can pick it up for you—ASK HIM!
THE CURRAN CORP., BOSTON OR WEST COAST: 445 TURK ST., SAN FRANCISCO, CALIFORNIA

COLD PROCESS GENERAL PURPOSE GARAGE AND CHASSIS GREASE REMOVER

GUNK CLEANS CLEAN

When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL
JANUARY, 1939

You and Signal Patents

Patents on turn signal equipment directly affect you. . . . Covered by more than 30 major signal patents, Teleoptic Signals offer you exclusive features that make your trucks and cars safer, make signal maintenance less, and protect you against inferior makes. . . . Insist on Teleoptic — the original turn signal. Write for details.

The Teleoptic Company
RACINE, WISCONSIN

JONES PORTABLE TACHOMETER



The world's largest operators of commercial vehicles use Jones Portable Tachometers to check engine speeds for tune-ups, and setting governors, etc. Here are a few: Standard Oil Co., of La., N. J., N. Y.; Shell Petroleum Co.; Atlantic Refining Company; Tidewater Oil Company; Keechin Motor Express; Mack Trucks, Brockway, U. S. Navy. Direct, instantaneous reading.

JONES-MOTROLA-STAMFORD, CONN.
432 FAIRFIELD AVENUE

OSHKOSH

4 Wheel Drive Trucks

A proven product. 1½ to 10 ton capacity. Write for complete information.

OSHKOSH

Motor Trucks, Inc.

Oshkosh, Wis.

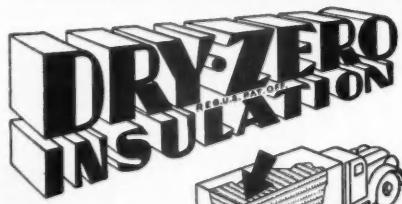
The Accepted Standard

TIMKEN

3 for 1

AXLES

WRITE FOR DATA



FOR INFORMATION WRITE TO
DRY-ZERO CORPORATION
MERCHANDISE MART • CHICAGO

COMMERCIAL CAR JOURNAL
JANUARY, 1939

When writing to advertisers please mention Commercial Car Journal

of continual heavy loads carried."

Another fleet declared: "After having several major truck companies' trucks in service, we had a good many frame failures. We decided to purchase a truck that had a heat-treated frame and have not had a failure on the identical operation in four years."

From a fleet of 75 trucks: "Frame reinforcements have been necessary on untreated frames, where truck gross rating had been exceeded. Heat-treated frames can take it without sagging."

Of 95 operators who stated that they were not influenced in their choice of a truck by the fact that it had a heat-treated frame, not one advanced an opinion or experience that could be construed as favoring the non-heat-treated frame exclusively. Most of them pleaded ignorance while others said that their particular service was not severe enough to warrant specification of frames.

Illinois Gains New Taxing Power

Right of a state to limit the size and weight of trucks using its highways, was established by Judge L. LeRoy Adair, of the United States Court, Springfield, Ill., in a far-reaching opinion upholding the State of Illinois in the case brought more than a year ago by the Brashear Freight Lines, Inc. The trucking concern had sought an injunction to restrain the state from collecting truck license fees on the grounds that the fee statute was unconstitutional and that heavy trucks were discriminated against in favor of passenger cars and other lighter vehicles.

Judge Adair's decision is interpreted to give the state the right to tax "foreign" trucks from other states for use of the Illinois highways. It is also interpreted as establishing a basis for future legislation requiring heavy duty trucks to pay their full proportionate share of highway construction and maintenance costs.

Hercules Names Winner

First prize in a contest for the best list of articles which can be carried in the Hercules tire and tool pack mounted under the front of a dump body was awarded to Leon H. Zele, Zele Chevrolet Co., Torrington, Conn. The contest was conducted by the Hercules Steel Products Co. during the New York truck show. All told, the list of items offered by contestants included 57 different products.

Do-Ray Introduces Approval Tag

Initiating a program of identifying the acceptability of its line, the Do-Ray Lamp Co., Chicago, has announced that all of its products will carry a label stating that the item passes specifications of the S.A.E. and I.E.S. and is accepted by the I.C.C.

1. High Dumping Angle.
2. Modern Efficiency in Dirt Moving.
3. Elimination of tail-gate.

There is a St. Paul Hydraulic Hoist and Body for every model of truck.

Write for name of nearest distributor.

St. Paul
HYDRAULIC
HOISTS & BODIES
2207 University Ave. S. E.
Minneapolis, Minnesota

For running-in new and rebuilt engines use auxiliary lubricants containing "dag" * Brand colloidal graphite.

Acheson Colloids Corporation

Port Huron Michigan

*REG. U. S. PAT. OFF.

KINNEAR TRUCK DOORS

Also Doors for Buildings

ALL METAL . . .
. . . . Coils like a window-shade, out of the way

CONVENIENT BURGLAR PROOF FIRE PROOF MORE DURABLE

Write for Details

KINNEAR
Manufacturing Company
2100-20 FIELDS AVE
COLUMBUS, OHIO

Advertisers' Index



Acheson Colloids Corp.....	93	Eclipse Machine Div. of Bendix Aviation Corp.	72	Midland Steel Products Co... 62
Albertson & Co., Inc.....	80	Edwards Iron Works, Inc....	86	Motor Improvements, Inc.... 12
Alemite, a Subsidiary of Stewart-Warner Corp.	87	Electric Storage Battery Co... 45		National Tube Co. 73
Aluminum Company of America	3rd Cover	Ethyl Gasoline Corp.....	71	Oshkosh Motor Trucks Co.... 93
American Automatic Devices Co.	81	Exide Batteries	45	Parish Pressed Steel Co., Sub-sidiary of Spicer Mfg. Corp. 95
American Bosch Corp.....	7	Federal-Mogul Corp.	88	Reo Motor Car Co....Front Cover
American Cable Div., American Chain & Cable Co., Inc.	79	Federal Motor Truck Co....	91	S K F Industries, Inc..... 1
American Chain & Cable Co., Inc.	9	Fitzgerald Mfg. Co.....	79	St. Paul Hydraulic Hoist Co... 93
American Steel & Wire Co....	73	Ford Motor Co.....	65	Salisbury Axle Co. 95
Anthony Co.	80	Four Wheel Drive Auto Co., Back Cover		Schrader's Son A. Div. of Scovill Mfg. Co..... 82
Arrow Safety Device Co., Inc.	92	Frink, Carl H., Inc.....	91	Service Recorder Co. 54
Autopulse Corp.	86	Fruehauf Trailer Co.....	69	Sherwin-Williams Co..... 75
Available Truck Co.	92	Fuller Mfg. Co.	64	Shuler Axle Co., Inc..... 87
 		G. & O. Mfg. Co.....	80	Simmons Mfg. Co. 92
Beaurline Fountain Brush Co.	84	Gar Wood Industries, Inc....	92	Snap-On Tools Corp. 80
Bendix Products Corp. (Sub-sidiary of Bendix Aviation Corp.)	43	Gatke Corp.	74	Spicer Mfg. Corp. 95
Bendix - Westinghouse Automatic Air Brake Co.	67	General Motors Corp.	8	Standard Oil Co. (Indiana) 11
Blood Brothers Machine Co.	66	Goodrich Co., The B. F....	82	Sterling Motors Corp. 86
Bowser & Co., Inc., S. F....	96	Gramm Trailer Div. Gramm Motor Truck Corp.	84	Studebaker Corporation 57
Brown-Lipe Gear Co.	95	Gulf Oil Corp.	51	
 		Hall Mfg. Co.....	86	Teleoptic Co., The 93
Carnegie-Illinois Steel Corp..	73	Hansen Mfg. Co., A. L....	3	Texas Co., The..... 4-5
Carpenter Mfg. Co.....	92	Heil Co., The	87	Thermoid Co. 15
Champion Spark Plug Co....	55	Hein-Werner Motor Parts Corp.	83	Thornton Tandem Co. 86
Chase & Co., L. C....	70	Highway Trailer Co.....	2	Timken-Detroit Axle Co.... 93
Chevrolet Motor, Div. General Motors Sales Corp.	10	Hoof Products Co.....	68	Timken Roller Bearing Co.... 86
Chilton Co.	96	 		Truck Equipment Co., Inc.... 84
Columbia Steel Co.	73	International Harvester Co., Inc.	16	Trucktor Corp., The..... 91
Columbus - McKinnon Chain Corp.	87	 		
Cummins Engine Co.	58-59	Jones-Motrola	93	United States Steel Products Co. 73
Curran Corp., The.....	92	 		
 		K-D Lamp Co.	66	Wagner Electric Corp..... 63
Dayton Fuelometer Corp....	81	Karpex Mfg. Co.....	86	Walker Vehicle Co. Div. of the Yale & Towne Mfg. Co. 92
Denman Tire & Rubber Co... 80-81		King-Seeley Corp.	86	Walter Motor Truck Co.... 85
Ditzler Color Co.....	6	Kinnear Mfg. Co.....	93	Warford Corp., The 92
Dodge Div. of Chrysler Corp., 2nd Cover		 		Watkins Babbittting Service.. 88
Do-Ray Lamp Co.	78	McCulloch Engineering Co....	81	Waukesha Motor Co..... 92
Dry-Zero Corp.	93	McKay Co., The	91	Wilkening Mfg. Co. 13
 		McQuay-Norris Mfg. Co....	14	Wittek Mfg. Co. 91
Eberhard Mfg. Co. (Div. of the Eastern Malleable Iron Co.)	60	Mack Trucks, Inc.	53	Wood Steel Co. Alan..... 61
		Magnus Chemical Co.....	84	
		Mapor Corp.	91	Zenith Carburetor Corp. (Sub-sidiary of Bendix Corp.). 56
		Marmon-Herrington Co., Inc..	87	Zink-Bordik Products, Inc.... 87

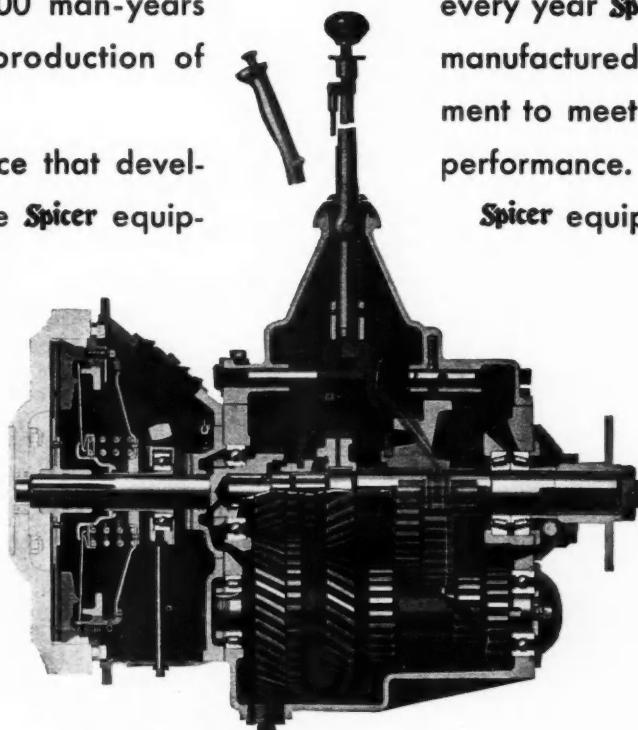
20,000 years experience IN THE AUTOMOTIVE INDUSTRY

Actually the **Spicer** personnel offers many more than 20,000 man-years of engineering and production of automotive parts.

This is the experience that developed and produces the **Spicer** equipment for 1939 models. The increased efficiency, dependability and economy of motor vehicle performance is reflection of the like improvement in **Spicer** products . . .

Since the earliest days of the industry, every year **Spicer** has developed and manufactured new and better equipment to meet the demand for better performance.

Spicer equipped vehicles prove the value of experience and skill in manufacture. Users find dependable performance and remarkable freedom from repairs proof of how well **Spicer** serves the industry.



Brown-Lipe Helical Gear Transmissions, with 3, 4, 5 or 8 speeds forward, are available for any type of commercial vehicle. . . Above is illustrated the Brown-Lipe Model 5341 4-Speed Helical Gear Transmission.

Spicer Manufacturing Corporation • Toledo, Ohio

BROWN-LIPE
CLUTCHES and
TRANSMISSIONS

SALISBURY
FRONT and REAR
AXLES

SPICER
UNIVERSAL
JOINTS

PARISH
FRAMES
READING, PA.

NEW PRODUCTS

(CONTINUED FROM PAGE 87)

New Teleoptic Switches

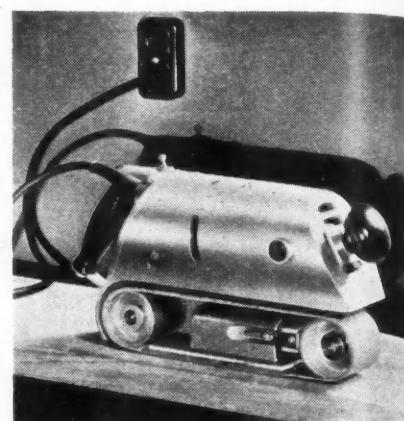
Two new switches for controlling direction signals have been introduced by the Teleoptic Corp., Racine, Wis. "Finger-Flip," illustrated, is a refinement of earlier models, fits on the conventional gear shift lever. "Handi-turn,"



a new addition to the line, replaces the knob on cars equipped with steering column gear shift controls. Both models are available with either peg-type lever, or with depressed bakelite knob. Full details from the manufacturer.

New Belt Sander

A new portable electric belt sander speeds body and fender work as well as paint removing operations. The Guild-Sander, as it is known, is extremely light in weight, has a belt travel of 600 ft. per second, uses belts 2 in. wide and 21 in. long and features an instant belt change mechanism. Universal AC-DC motor plugs



into any convenient socket. For full details, write Syracuse GuildTool Co., Syracuse, N. Y.

Turner Metal Spray Gun

A new Turner spray gun for all lead-tin alloys has many unusual features. While retaining most conventional characteristics, the new gun operates on low air pressure, and is provided with an instantaneous con-

YOUR PULSE TELLS MANY FACTS
.. to the Doctor

BOWSER

AKRAFLO
FUEL CONSUMPTION METER...
*the pulse of
the motor*

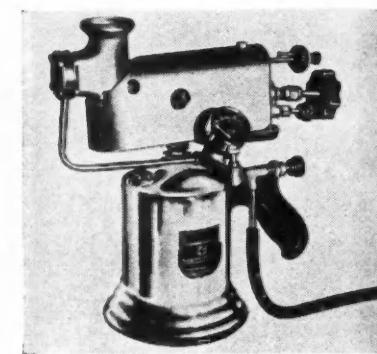
To know all about fuel consumption — to check drivers and motors — to secure valuable cost data — install AKRAFLO — the pulse of the motor. High accuracy . . . tamper-proof design and sturdy construction make it the ideal way to keep fuel costs down. Made in two models . . . for busses, trucks, taxis, etc. At its attractive price — you need it. Get full facts!

S. F. BOWSER & CO., Inc.
1358 Creighton Avenue
FORT WAYNE, INDIANA

TO CHECK FUEL CONSUMPTION ACCURATELY . . .

CHECK it at the MOTOR

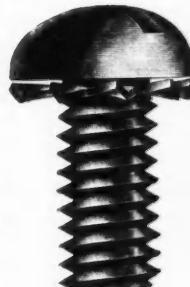
MADE BY THE MAKERS OF
THE WORLD'S MOST WIDELY USED METER



trol of spray from fine to coarse and on or off. It is said to operate for four hours at a cost of five cents for gasoline. Full details from Turner Brass Works, Sycamore, Ill.

Lock Washer—Screw

A new fastening unit known as "Sems" has been added to the Shakeproof line of metal fastenings. It consists of a genuine Shakeproof lock washer pre-assembled on a machine screw. In addition to saving time the unit assures the correct size washer under every screw head. Waste and loss are eliminated. Ask for details from Shakeproof Lock Washer Co., 2501 N. Keeler Ave., Chicago, Ill.



Swedish Dies

Michael Swedish, salesman for the Los Angeles branch of Gar Wood Industries, Inc., died suddenly, Nov. 6, following an emergency operation for a pancreas disorder.